

The Woodworker
AND
Art Craftsman
1913

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To Andrew A. Roberts,

From His Sister Jane.

On the occasion of his birth-day

March 12th. 1914.

The Woodworker

and

Art Craftsman

JANUARY TO DECEMBER, 1913.

VOL. XVII.

GENERAL CONTENTS.

PLAIN FURNITURE. CARVED FURNITURE. INLAID FURNITURE.
DINING ROOM, DRAWING ROOM, HALL, LIBRARY,
BEDROOM AND NURSERY FURNITURE.
CABINETS AND CUPBOARDS, CHAIRS, COUCHES AND SETTEES, STOOLS, OVERMANTELS,
SIDEBOARDS, BOOKCASES, PLAIN AND ORNAMENTAL TABLES, WARDROBES,
FRAMES, MIRRORS, CLOCKS, ETC.
WORKING DESIGNS FOR FURNITURE, CARVING, INLAYING, ETC.
WOOD-CARVING. INLAYING. WOOD-TURNING. FRET-CUTTING.
WOOD PANELLING. OUTDOOR WOODWORK. GARDEN FURNITURE.
WHEEL MAKING AND WHEEL REPAIRING.
MANUAL TRAINING.
PRACTICAL HINTS ON INDOOR AND OUTDOOR WOODWORK, HINTS ON WOOD, TOOLS, JOINTS, ETC.
POLISHING AND STAINING. WOODWORK PUZZLES.
IRONWORK. REPOUSSÉ WORK. JEWELLERY MAKING.
ILLUSTRATED REPLIES TO READERS' QUERIES.

LONDON:

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SARDINIA HOUSE, KINGSWAY, W.C.

Sole Publishers of THE WOODWORKER Series of Practical Handbooks.

THE WOODWORKER.

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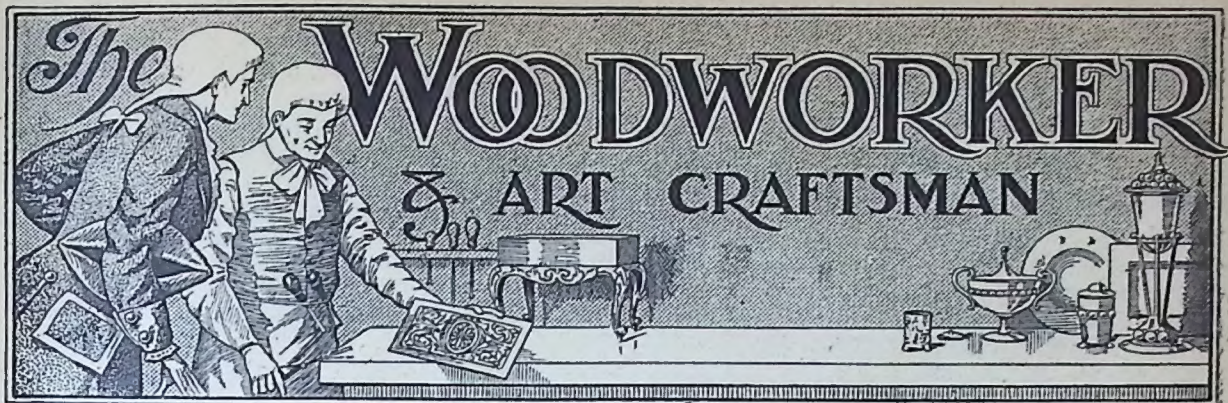
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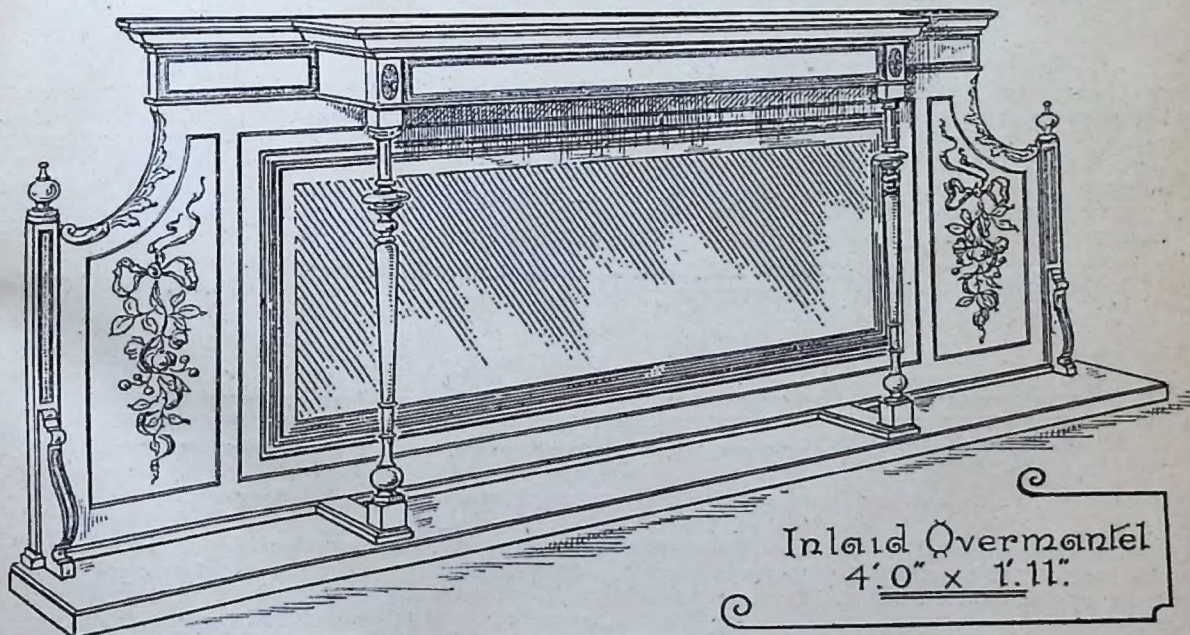
DESIGN FOR THE MONTH.

Inlaid Overmantel.

ON the Design Supplement which accompanies this month's issue will be found necessary full-size details for making the handsome inlaid overmantel illustrated below.

Although specially designed for carrying out in mahogany (Sheraton colour), with inlaid bandings and side panels, we may add that the overmantel

and 1 ft. 11 ins. high. The base board is $6\frac{1}{2}$ ins. wide, and the width (front to back) over the cornice at its wide part is $7\frac{1}{2}$ ins. The mirror has a sight opening of 2 ft. $3\frac{1}{2}$ ins. by 12 $\frac{1}{2}$ ins. These sizes might be varied according to requirements, but care must be taken not to destroy the general proportion. The article is so designed, however,



Inlaid Overmantel
4' 0" x 1' 11"

is suitable for treatment in other ways. Instead of being inlaid it may be carved; or, if the worker should feel unequal to inlaying and carving alike, it may be left without any ornament except the turned columns and finials. A carved or plain overmantel will look well either in dark walnut or mahogany.

The over-all size given is 4 ft. long over the base

that adjustment of size is possible. The height might be increased an inch or so without materially interfering with the design; the length is still more easily altered, it being possible to add or deduct an inch or two by a variation in the size of bevelled mirror.

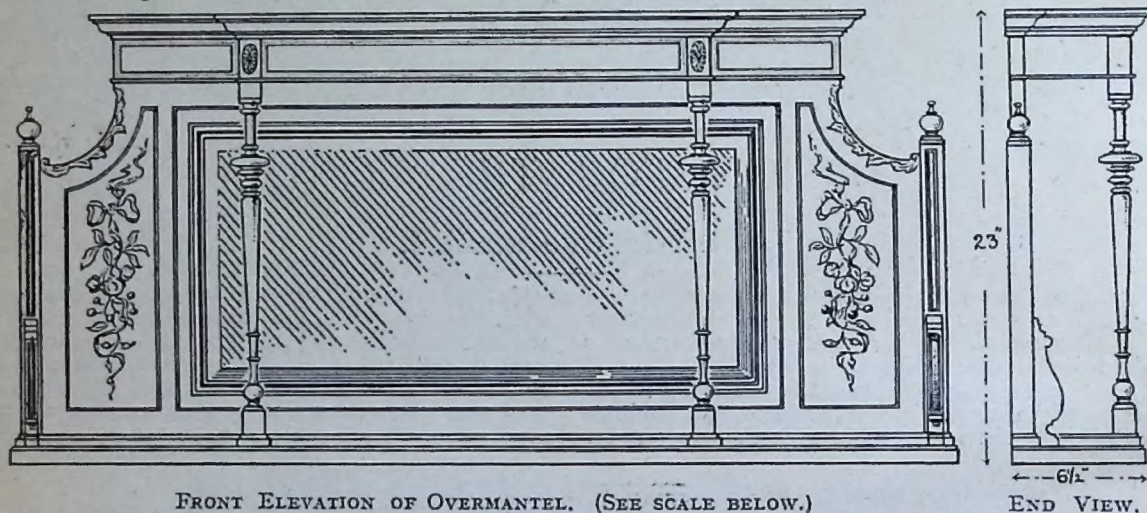
The base is 4 ft. long, $6\frac{1}{2}$ ins. wide, and $\frac{7}{8}$ in. thick. It should have a simple bead edge. The

back plinth may be solid, or the effect of a plinth may be secured by moulded strips, neatly mitred at the corners. If solid, the plinth is 3 ft. 11 ins. long, $1\frac{3}{8}$ in. wide, and $\frac{3}{8}$ in. thick. The plinth is returned to support the turned columns. The end front brackets, however, are scribed to the plinth.

The end pilasters may be solid posts, $1\frac{1}{8}$ in. square, or may be formed by planting $\frac{1}{4}$ in. faces on the framing. A solid post gives a little more

side panels. The frieze is decorated with $\frac{3}{8}$ in. banding, this coming close up to the edge. Only the front panels of the frieze need be illustrated. Pateras suitable for the return parts of the frieze above the columns may be purchased, and do not need to be specially cut. Instead of pateras, a panel of narrow satin or box lines may be let in.

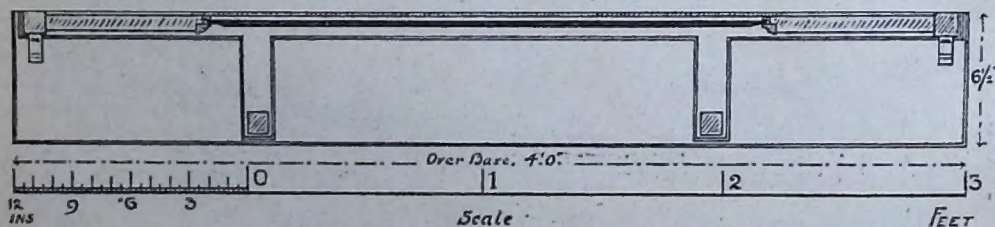
On the faces of end posts, and on the shaped faces of the two brackets, $\frac{3}{8}$ in. inlaid banding is let in, the ends being neatly squared off to indi-



trouble, but makes for extra strength. Assuming that solid posts are used the back framing will be made up of $8\frac{1}{2}$ ins. wide stiles, and $2\frac{1}{2}$ ins. rails, all $\frac{3}{8}$ in. thick. If solid posts are used allowance in the stiles must be made for tenons; whilst, if a pilaster is planted on, the framing must be increased to about $9\frac{1}{4}$ ins. If carving, as shown, is

cate panels. The carving on the shaped ends is an improvement, but might be omitted if desired. Or, as an alternative, the same pattern might be treated as an inlay.

The ornamental panels ought not to be found difficult by those who are experienced at inlaying. Around the mirror moulding is run a box or satin



introduced on the shaped corner, it will be found simpler to plant this on. The mirror will have a moulding as indicated, and will be fixed in the usual way.

The frieze and cornice are returned at the centre to form a projection for ornaments, this part being supported by two delicately turned columns. The central portion is of course boxed, the top being flat. As full-sized details are given on the supplement it is unnecessary here to add particulars as to sizes.

The ornamental work on the overmantel consists of inlaid bands, lines and pateras, and two inlaid

line, and the continuation of this line forms the end panel which, as drawn, is of a good proportion.

The turned columns are of delicate design and require sharp tools and clean-cut edges. The turned finials on the end posts are simple.

In this number we begin two new series of important woodwork subjects—Panelling, and Wheel Making. These will be continued during the volume. An article unavoidably postponed till next month is on an Ornamental Display Dresser, a novel piece of furniture which we have no doubt will be made by many readers.

A Leather Wrist Bag with Silver and Pearl Ornament.

A SKETCH is here given of a very successful piece of work. It will perhaps appeal to those jewellery makers who want an important looking piece for the centre of their exhibition cases, yet who find that large pendants and such things are not readily saleable.

The stones used are baroque pearls and amethysts, and little need be said as to the setting. The expert jeweller will see how to do it from the drawing, and this is not a piece of work for the tyro to attempt.



WRIST BAG WITH SILVER AND PEARL ORNAMENT.

The silver ring for the wrist consists of two rows of plain wire, with a simple twist soldered in the groove between them. There are also two small rings for the attachment of the straps. The toggle or button has a small ring soldered at the back for attachment to the purse.

The ornamental wreath on the flap consists of five small amethysts set in collets. They are mounted on a strapwork of flat wire. These wires must not really be plaited though they appear to be so. The centre one should be kept straight, and the side ones waved. The making up of the purse will not be found difficult by any one who is used to working in soft leather. A pleasant shade of green should be chosen, with

amethyst satin for the lining. The best part of the skin should be selected for the bag, and the inferior part used for cutting into narrow strips or thongs. The holes must be punched with a sharp ring tool, on a lead bed, and the thong should be given a half twist at each stitch, so as to show the pleasant contrast of the wrong side of the leather. The thongs for suspension should be cut rather wider than those for stitching; the toggle and the pendants are also attached by means of the leather stitches. Strong buttonhole silk must be used for fastening off, keeping the stitches out of sight. The loop which passes over the button has the centre pendant pearl attached to it; the others are fastened to the edge of the flap. The wreath on the flap is secured by stitching over the centre wire, the two outer ones being left free. The flap must be lined with leather, but a silk or satin lining is better for the purse itself. The back should be stiffened with card. A rather heavy doeskin is best; suede is too light. If a leather worker or bookbinder can be found to collaborate, a very beautiful effect can be obtained by tooling the leather. An exquisite handbag of French workmanship, the product of a celebrated studio, had fittings of gold and turquoise matrix, the bag itself being of white kid with an elaborate impressed pattern. It was not more expensive than the mechanical looking gold chain bags which one sees displayed in shop windows, but it was a work of art, and displayed the owner's taste and love of beauty.

Colour-Toning in Cabinet Wood.

With the more general disposition to use woods in natural colours, there is a natural tendency to devote more attention to the colour tones of wood and how to improve them. The fuming process for oak has become familiar in recent years, but that is not by any means the only effort at colour-toning wood. There are several processes of staining wood under pressure. There should be an easy distinction between staining and toning, as much as there is between figure-matching and toning in putting up cabinet work. One of the late ideas in colour-toning wood has to do with steaming it under pressure. At first this is suggestive of the steam-drying process, but there seems to be a distinction here, too. Perhaps drying oak with steam under pressure gives a better colour tone than to dry it in the open air or in the regulation kiln, but this is mainly a drying process. There is another steaming process that has for its main object the giving of a better colour to such woods as oak, mahogany, cherry and walnut. It involves steaming in a tank or boiler under a pressure running as high as fifty pounds, and not merely a little incidental pressure such as may be had with exhaust steam; also the use of certain other chemicals along with the steam, to bring out a deeper colour. This at times involves drying in the kiln before treating, and then another trip back to the kiln to dry out the moisture of the steaming process. The claims for the process are that it gives a better and more life-like colour than fuming, and that it goes far towards eliminating the great variety of shades in mahogany, bringing all the wood to a practically uniform colour. In addition to steam, ammonia and other chemicals are used, the precise details being more or less a trade secret.

Wheels and Wheel Making.—I.

How to Make a Barrow Wheel.

THE making of wheels is generally considered one of the most difficult matters in connection with wood-working; but, provided one has the opportunity of getting some insight into the matter, it will be found that the difficulties are by no means insurmountable, while the number of tools required and the skill to use them compare very favourably with some other branches which are tackled by amateurs.

wheel. So if any reader tackles this first one, and turns it out creditably, he need not be afraid to follow on.

A barrow wheel of the description we are now dealing with consists of the hub A (Fig. 1), 18 ins. long by 4 ins. square; one through-spoke B, 18 ins. long, $3\frac{1}{2}$ ins. wide, by one inch thick; one through-spoke C, the same length by 1 in. in diameter; and the four "felloes" D, which form the rim, and which should be $2\frac{1}{2}$ ins. square, and of the length required to allow of cutting off to form the complete circle.

All the above are clearly shown in the side

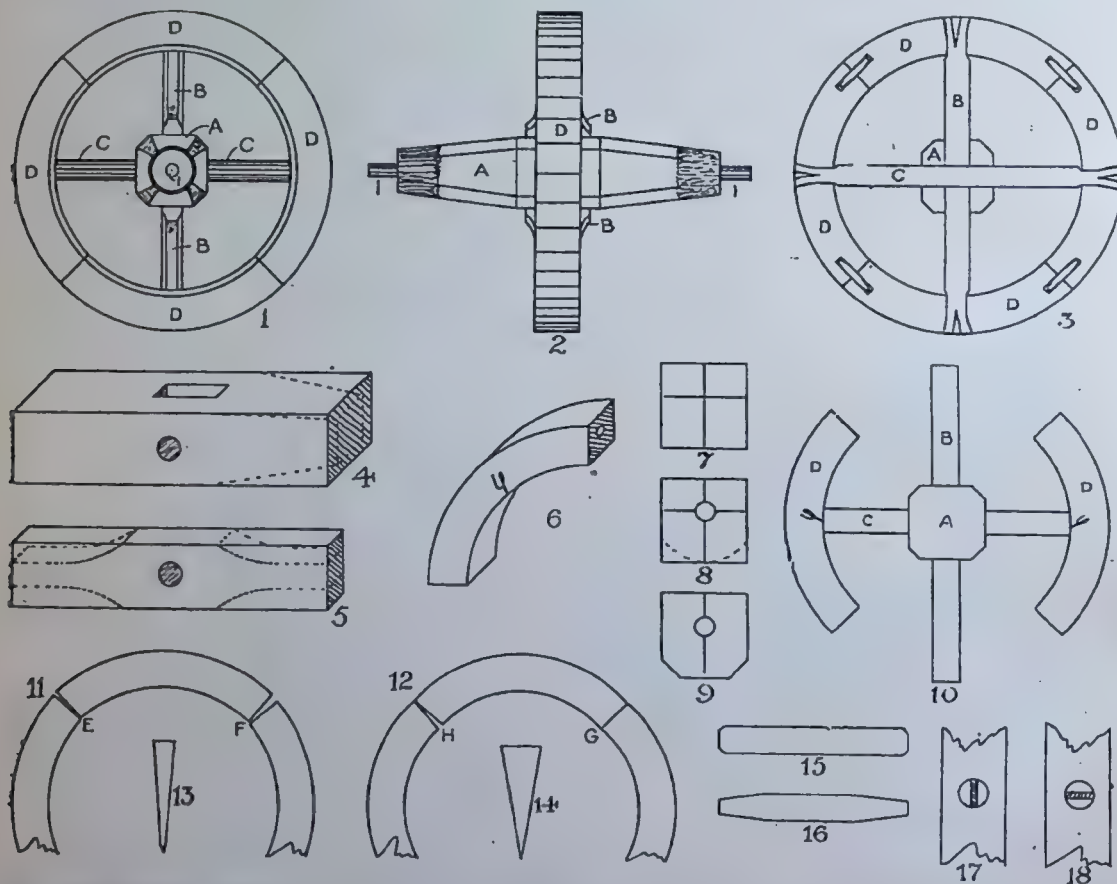


Fig. 1, Side Elevation of Wheel. Fig. 2, Front Elevation. Fig. 3, Section, showing Construction. Fig. 4, Hub, mortised and bored for Spokes. Fig. 5, Spoke, bored and marked for shaping. Fig. 6, Felloe shaped and bored for Dowel. Fig. 7, End of Felloe gauged for boring. Fig. 8, Felloe bored. Fig. 9, Felloe chamfered. Fig. 10, Felloes in position for marking exact lengths. Figs. 11 and 12, Effect of striking out Felloes to larger radius and otherwise. Fig. 13, Correct Shape of Wedge. Fig. 14, Incorrect Shape of Wedge. Fig. 15, Incorrect Shape of Dowel. Fig. 16, Correct Shape of Dowel. Fig. 17, Wedge inserted incorrectly. Fig. 18, Wedge inserted correctly.

As a start on the subject of wheel making, we have chosen the making of a wheel suitable for the ordinary garden wheelbarrow. The materials required are comparatively small, but no one must think that this is the easiest member of the wheel family to construct. The writer remembers an old wheelwright with whom he worked declaring most emphatically that if anyone could make a barrow wheel well they could make any kind of

and front elevations (Figs. 1 and 2) of the finished wheel. The hub and the spokes are best made of oak, though ash will do; the felloes should be of ash, but elm and beech make good substitutes. Whatever timber is used must be thoroughly dry and seasoned.

The hub should be prepared first, by planing one side straight and out of twist, and squaring another side from it. The remaining two sides can

be gauged from these two; the surplus wood is then removed, so that what is left is straight, each side at right angles to its felloes and the whole parallel. And here we may say that, if a good job is to be made, it is necessary that absolute truth be arrived at in all parts.

The through spoke B must next be planed up in the same way, and lastly the fellow one C can be done in the same way, with the difference that this one must be chamfered off at the corners to make it a true octagon, and then made sixteen-sided (which is as near an approach to a round as is necessary), each operation being done so that the work is parallel on all sides.

The hub must be set out on two opposite sides for a mortise in which the through spoke B will fit very tightly, and on the truth of this mortise will depend in a great measure the truth of the wheel when finished.

At the opposite two sides to where the mortise is set out, and in the middle every way, a hole must be bored the right size, to allow of the spoke C being driven in tightly. To ensure truth, the hole should be bored from both sides of the hub, meeting in the middle.

Fig. 4 shows the hub with the mortise made and the hole bored, the dotted lines showing how the ends have to be tapered down previous to chamfering. After the hub is tapered to correct shape the corners can be chamfered off as shown in Figs. 1 and 2, the extreme ends for about 2 ins. being merged into a circle as shown. After the hub is shaped, the spoke B must be driven in until it projects equally at each side. It can then be shaped as dotted lines in Fig. 5 while it is in position. If shaped before it is driven in, there is danger of splitting the reduced ends.

The hole in the hub may now be continued through the spoke B, so that the spoke C can be driven into position. Then the ends of both spokes can be tapered—that is, reduced slightly as shown in Fig. 3, so that shoulders are formed for the felloes to drive up to. The correct distance for the four shoulders may be obtained by measuring from the four sides of the hub.

We are now ready for the four felloes. These should be cut out of a plank $2\frac{1}{2}$ ins. thick, and instead of marking them to a circle of 18 ins., the height of the wheel, they should have a radius of $9\frac{1}{2}$ ins., making a circle of 19 ins. The inside should be marked from a radius of 7 ins. After cutting (or getting cut), one side should be planed up out of twist, and marked as the face (see Fig. 6); after this the inside curve must be correctly worked and squared across from the face side; the outside curve can also be marked, but should not be worked.

The holes in the felloes for the spokes to fit into can be bored in the middle of each, taking care to bore them true both side and edge ways; two of the felloes can be cut off as Fig. 6, the two end cuts being at right angles to each other, and also square from the face.

These two felloes are placed in position, one on

each end of the spoke, as in Fig. 10. With the wheel in the position shown, the other two felloes can be laid on, and marked accurately for length, so that they will just fit in between those already on and complete the circle. The ends of the latter will now be cut off to the marks, and the first two removed from the spoke. The four must next be gauged on the ends for the position of the dowel holes, as Fig. 7. This gauging must be done from the face side and the inside curve. Fig. 8 shows the hole bored, and Fig. 9 shows the inside corners chamfered off. If preferred the inside curve may be rounded entirely—as dotted line in Fig. 8.

In boring the holes for the dowels, take care to make them as nearly as possible at right angles to the cut, so that the dowel will be perfectly straight when the wheel is together, as in Fig. 3.

The holes for the spokes may be slightly opened out at the back of the felloes lengthways, so as to give room for the wedges to expand the end of the spokes; but do not overdo this, or the latter will be weakened if not broken.

The dowels should be made as Fig. 16, not as Fig. 15. They should be of such a size that they can be pushed in with the hand, or at any rate driven home with a gentle tap of the hammer.

The four felloes must be driven on to the spokes gradually, so that the dowels are not bent, and all go on together until the ring is complete. The ends of the spokes should be split for the wedges, not sawn, and the wedge should be inserted as in Fig. 18, not as Fig. 17; the latter will split the felloe. The wedges should be an easy taper, as Fig. 13; the very sharp wedge as Fig. 14 is not satisfactory.

In cutting off the felloes to fit one another, make the inside fit somewhat the tightest, as Fig. 11 (E), but do not overdo this as F, or, when the tyre is put on, the joint may be pulled in as at G, Fig. 12. On the other hand, if the joint is made an exact fit, or the inside is left slack, the putting on of the tyre may open it as at H. Figs. 11 and 12 also show the reason for striking out the felloes to a larger radius than the exact size of the wheel. The tyre, being put on hot, always has a tendency to flatten the joints; thus the extra radius counteracts this as in Fig. 11, whereas, if the exact radius were used the effect of a very tight tyre would be as Fig. 12.

In addition to the iron tyre, iron bands must be fixed on the rounded ends of the hub, and iron pins or "gudgeons" (1 Figs. 1 and 2) must be driven in to form the bearings for the wheel to run on.

(To be continued.)

To Tan a Netted Hammock.

Boil two pounds and a-half of good old tan in spring water for half-an-hour. Then filter and press the residue, and you should have about three gallons and three-quarters of liquor ready for use. Immerse the net in this fluid in an earthenware or copper vessel (not iron), and let it brew for forty-eight hours. Then wring out the net, wash it, wring again, and dry in the air.

Simple Types of Wood Carving.

BY HERBERT TURNER.

A Carved Inkstand.

IN a previous issue attention was called to the value of simple forms of wood carving in their application to simple objects of use. It is not always the most elaborately conceived pattern that is most effective. Simplicity is at the root of all good work.

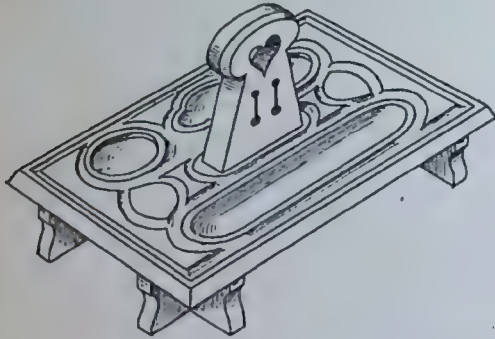


FIG. 1.—INKSTAND WITH SIMPLE CARVING.

We give here a useful Inkstand, simply made, and just as simply designed. The design is one that can very easily be manipulated with two carving tools, and the carving includes within its scope the whole of the surface, including space for pens and oddments. The actual making of the inkstand is easy, too, and yet includes some very interesting woodwork exercises. This may commend it to manual instructors, as being a useful model for course work, apart from its value as an object for the exercise of simple carving.

The overall sizes suggested are :—

12 ins. long by $7\frac{1}{2}$ ins. wide by $1\frac{1}{2}$ ins. high. For all smaller sizes and measurements see the dimensioned sketches.

Oak, American walnut, kauri pine, canary wood and satin walnut are all excellent woods for the inkstand, and as the handle and feet can be made of wood there is no need to have recourse to any other material.

First plane up two pieces, 12 ins. long, and two pieces $7\frac{1}{2}$ ins. long by 1 in. wide by $\frac{1}{2}$ in. thick, actual and accurate sizes. Then set each pair out as shown in Figs. 6 and 7. The shaded parts are the parts to be taken out. Saw inside the lines, and make the lines with a cutting knife. Now smooth up and prepare the ends. To smooth the ends, use a file and then sandpaper, first rough, and then fine. Glue together carefully, leave until set, and then clean off. Bore holes from the bottom edge, and countersink them for No. 6 screws, $1\frac{1}{2}$ in. long, to be ready for the top.

For the top, cut out a piece of wood, 13 ins. by 8 ins. by $\frac{1}{2}$ in., and plane up to 12 ins. by $7\frac{1}{2}$ ins. by $\frac{1}{2}$ in. exact size. Set out the place for the

handle and mortise through. Set out, or trace, the design. As it is geometrical it can be drawn on quite easily. Chamfer the edges, and the board is ready to be carved.

Only two tools are required to execute this simple kind of carving. It must be noticed that the places for pens, pencils, and nibs come within the range of the carving operations. The two tools required are illustrated in Fig. 8, known as No. 7 by $\frac{1}{4}$ in., and No. 5 by 5-16 in.

Use the quicker tool first; and cut around the outlines of the design. Then cut out the middle portion of the spaces, and work them down to nearly their ultimate depth.

Then with the other tool flatten them down. It is not necessary to take out the tool marks, even in the places for the pens. If the cuts are well made, and are not too obtrusive, they are preferable to a sandpaper finish. Tool cuts may be used as ornamental features, as shown in the

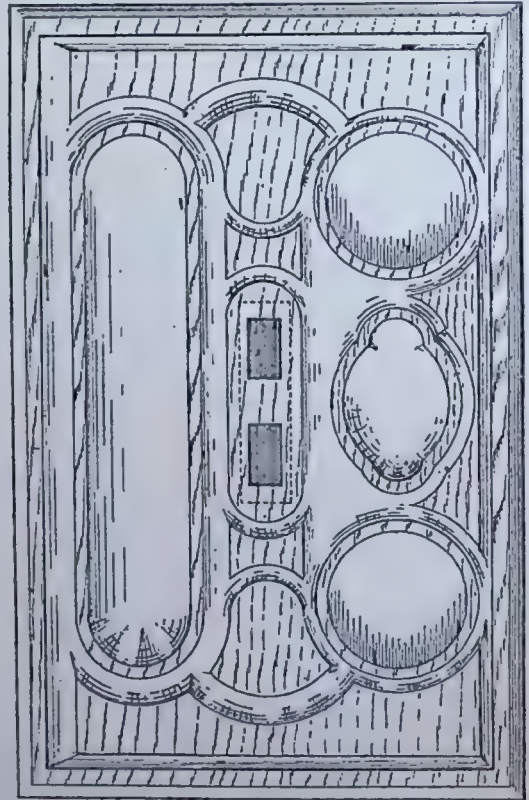


FIG. 2.—PLAN OF INKSTAND.

drawing, and as per section, Fig. 9. This using of the natural tool cut to form ornament is one of those things that form the foundation of successful applied ornament. The holes for the ink glasses may be cut down with an extension bit; or they may be worked with the two tools shown. The handle presents little difficulty. It is

tenoned to fit the mortise hole, and glued and wedged. The finger holes are cut with a $\frac{1}{8}$ in. bit, and shaped, and the top edge is chamfered.

To leave the wood its own colour is the best treatment, allowing time and constant

the merest novice may undertake the manufacture of the same without a quail as to difficulty of achievement. For, as the *Pall Mall Gazette* recently pointed out, like everything else in the needlework world of to-day, this work has been rendered perfectly easy.

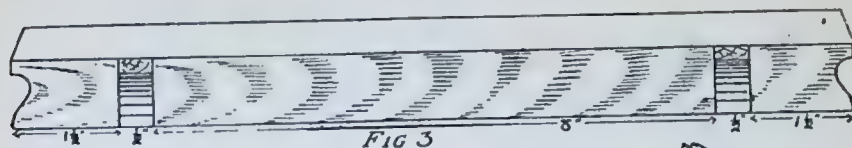


FIG. 3.--FRONT ELEVATION (WITHOUT HANDLE).

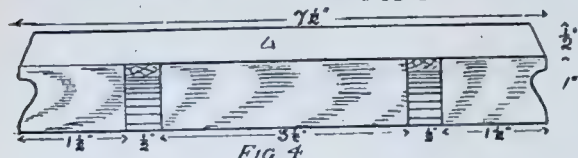


FIG. 4.--END ELEVATION (WITHOUT HANDLE).

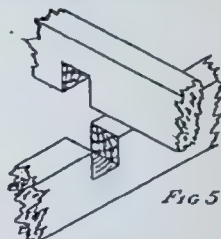


FIG. 5.--DETAIL OF HALF-LAP JOINT.

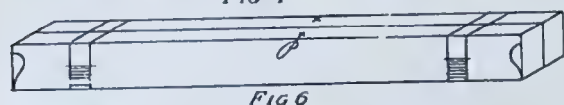


FIG. 6

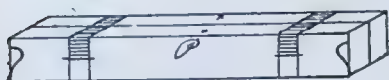


FIG. 7

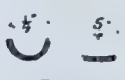


FIG. 8

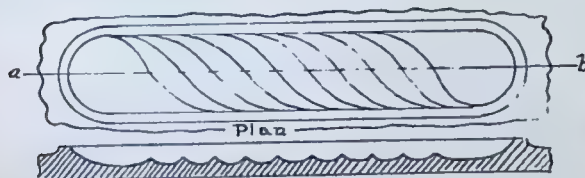


FIG. 9

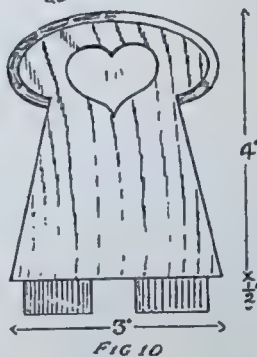


FIG. 10.--HANDLE.

polishing with a dry or slightly oily rag to get a good "patina" or surface. Oak may be fumed with liquid ammonia fumes, then oiled with raw linseed oil, and when dry rubbed with ronuk or with beeswax or turpentine. The same treatment, apart from the fuming, may be accorded to all the other woods.

The Revival of Bead Work.

EACH year brings its own particular novelty in this direction. This season special interest is centring round the revival of that quaint old, coloured bead-work which is sought after by connoisseurs, and which was so popular in our great-grandmothers' days, when bead embroideries were to be seen adorning fire screens, sofa cushions, footstools, and those quaint old trays used for holding teapots, hot-water jugs, and coffee urns. Needlewomen of to-day are, however, content with reviving the beautiful and quaint old bead bags and bead purses, worked after designs that are a reliqué of old-world patterns carried out in multi-coloured chalk and glass beads, which are to be had dyed in every imaginable shade of colour. Perhaps the greatest recommendation of the new bead bags is that they are so easy to work that

Not only can one buy the bags with the pattern already traced on the white canvas background, but one finds the correct colouring all ready washed in so that all that the worker has to do is to select the right shade of bead and sew it firmly on to the corresponding colour. Mounts for every purse are also sold with each pattern, and these can be had in steel, in silver gilt, or in German silver, according to taste, and in every case the mounts are all ready pierced so that the worker may mount the bags herself. A fashion has lately sprung up of ornamenting bead bags with mounts which are as richly jewelled as those that adorn gold and platinum bags. The new bead-work likewise provides occupation for the amateur enameller, who is turning her attention to beautifying mounts for the new bags and purses. These are carried out in the same colours used in the bead-work pattern, and they allow a wonderful scope for originality as regards colour combinations and beautiful designs.

Indian Drawings.

A loan from H.H. the Maharaja Gaekwar of Baroda, G.C.S.I., consisting of an interesting selection of over a hundred Indian drawings from the Baroda State Museum collection, has been exhibited in the Indian Section of the Victoria and Albert Museum, since November. The collection comprises chiefly Rajput illuminated tempera paintings of the 18th and early 19th centuries

Candle Sconce in Repoussé Copper and Brass.

OUR ancestors knew well what they were about when they made so many of their candle-sticks of brass and copper. Till well into the middle of the eighteenth century (when silver and Sheffield plate became popular) brass was the favourite metal. How it gleams and shines in the soft light shed by wax candles! Table candle-sticks are not much used nowadays, lamps having almost superseded them, and lamps in towns are being themselves superseded by gas and electric light. Hanging sconces, however, are different; there are very few rooms where a corner is not to be found which would be very comfortable to read or sew in if the light only reached it. This can easily be put right by the use of a wall sconce, which throws the light just where it is wanted.

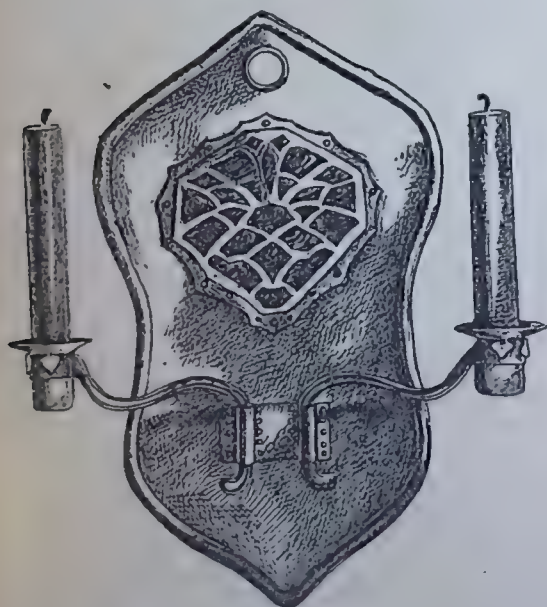


FIG. 1.—CANDLE SCONCE WITH SHELL PLAQUE.

The design given is arranged for candles, but it could easily be altered for electric light, or for the new method of gas lighting, which involves the use of only thin tubes, thus making possible far more fittings than when heavy pipes are a necessity. The back plate should be B.M.G., 7 or 8, and either brass and copper may be used. It should be cut to shape, having a margin of one-eighth of an inch all round. A deep groove must be worked round the edge. For this a brass tool should be used, and the metal need not be fixed on pitch, but the work carried out on wood. A narrower groove edges the hole by which it hangs. It will be found easier to raise the rim before the hole has been cut, as the tool is apt to slip while

doing the surrounding circle if the hole has been pierced first.

Before proceeding with the making-up, the decoration should be done. Two alternative schemes are given; the one on the original sconce involves a new method of work, which some may not care to embark upon, so a simple repoussé pattern has also been sketched.

The sconce, as carried out and shown in the drawing, is decorated with a plaque of green shell, showing through a net-work of fretted brass. It is not, of course, practicable to find a piece of shell of this size flat, so the plaque has to be made up out of a patch-work of smaller portions, fitted together. It is possible to buy green shell cut in thin flat slices ready for adjusting, or a whole shell can be bought and broken into angular fragments. These may be cemented straight on to the metal or on to a thin card or wooden base, but thus treated they are liable to come off, as the ground may bend or warp. A perfectly satisfactory way of preparing shell plaques, either green or mother-o'-pearl, is as follows:—Draw the outline on an oil-painter's canvas (an old study or sketch will do) and cover this with about one-eighth inch layer of gesso, compo., or a mixture of seccotine and whitening; into this press lightly the bits of shell, fitting them closely together so as to show as little ground as possible. When the gesso is hardening and nearly set, press the surface with a flat board or piece of glass so as to make pieces lie even, and squeeze up a thin film of gesso between them. Remove any superfluous ground with a pointed knife-blade. Be sure to wait till the part is sufficiently stiff before doing this. Leave till the following day to harden before cutting out. Touch up the ground which shows with black or green paint. It may also be gilded, and if the bits have been carefully fitted the lines look something like the crackle on a Chinese vase.

The overlaid brass, which holds it in place is of very thin metal (B.M.G. 3), and the fretting must be done between two pieces of wood. After cutting the fret must be carefully domed up in the centre about $\frac{1}{4}$ in. to receive the plaque. This can best be done by burnishing, as the thin metal stretches very easily. Holes must be drilled in the rim and the sconce, and the whole fixed by means of small rivets filed up from thick copper wire. If the repoussé design is used it can be worked direct on to the back plate. An enamel plaque might be used instead of the shell.

The next parts to tackle are the rockets for the candles. The saucer-like rims are cut out of circles of brass (B.M.G. 6), and the holes in the centre are cut with a fretsaw, leaving the ornamental projections as shown. Short tubes of brass are bent up out of similar metal, and soldered to a circular bottom. The leaf-like pieces left in cutting the holes are turned out so as to be free, and the sockets are slipped into the rims and soldered, using special brass solder. Take two lengths of stout brass wire, and hammer out the ends for about $2\frac{1}{2}$ inches into a thin ribbon, about $\frac{1}{2}$ in. wide. Bend this up into a ring, and fit it to

the sockets, passing it under the leaf-like ornaments which should be bent to grip the ring. Be careful to get this accurately fitted, as the stability of the candle depends on it. It is not advisable to solder the sockets to the ring, as this would make them difficult to clean. Bend the wires as shown, being particular to have the inch and a half which goes under the hinges absolutely flat, and straight, as the slightest curve there will render fixing difficult. Bend up the hinge out of a strip of B.M.G. 8 metal, and rivet firmly in place.

If the work is carried out in brass it should be finished bright with a high polish. If a mixture of metals has been selected the copper may be finished dark bronze, and only the brass brightened.

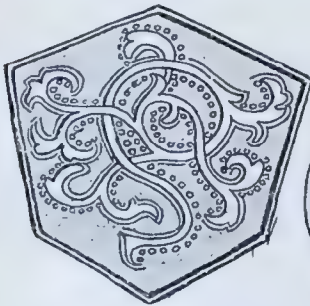


FIG. 2.—ALTERNATIVE
REPOUSSÉ ORNAMENT.

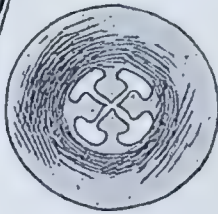


FIG. 3.—RIM OF
SOCKET.

If it is to be adapted for electric light it will be only necessary to fit one branch as one lamp will be ample. A porcelain candle lamp carrier may be fitted or the design turned upside down, so that the lamp will hang from the branch instead of standing up. The length of wire should be arranged so that the light shows well against the shell or repoussé ornament.

Some Notes on Timber.

THE woodworker frequently finds a piece of timber in which the fibres run obliquely, and often in handling such a piece it will break from its own weight. This defect is usually caused by exposure of the tree in the forest to prevalent windstorms in one direction, which tend to produce a twisted, spiral mode of growth. Timber is also affected by the action of insects, by water rust and by its own diseases. Rainwater, obtaining access to the layers of the tree through cracks in the bark, causes a brownish rust, which changes the character of the sap and reduces the wood to a powder. Bugs and insects, obtaining access through the bark, thrive upon the sap of the tree, and are one of the greatest enemies to the growth of the perfect tree. But where the trunk of the tree is evenly formed and shows a perfect bark, free from cracks and excrescences, it may be assumed that it will produce perfect timber.

A writer in *Woodcraft* emphasises the necessity for taking great care in properly piling timber to prevent the attack of parasitic plants, known as fungi. Timber piled in warm damp places, and excluded from the

sunlight, is subject to the growth of fungi, which soon decompose the fibre, and results in what is known as dry rot. No vegetation should be allowed to grow around the lumber pile, as it creates conditions favouring the germination of the fungi spores. It should be piled in dry and high locations only, and should be placed well up from the ground on staging and strips placed between the boards, so as to permit a thorough circulation of air.

Timber used for building purposes should be of straight grain, free from large or loose knots, wind and heart shakes, or the signs of any of the diseases or imperfection which often occur. When sawn, the surface should be clean and lustrous, giving a solid, bright appearance, free from spongy fibres. The sawdust should be granular, crisp, and without string. The heart wood should be mature and solid, and the layers next to the bark should be removed. The timber should be uniform in texture and when cut should smell sweet; a disagreeable odour is a sign of decay. Good timber should be of uniform colour; when blotchy or discoloured it denotes a diseased condition, caused either by defective growth or by piling the timber in unsuitable places.

The black and blue streaks often seen are the result of close piling which causes the sap to sour or ferment. When the wood is planed it should have a silky, shining surface; the shavings should be like ribbons and stand for twisting around the fingers. When the surface appears dull, and the shavings are short and easily broken, it is a sign that the material lacks in essential properties.

Nearly all classes of timber are subject to heart shakes or star shakes, which are the result of shrinkage of the layers, incidental to the loss of proper nourishment, usually caused after the tree has reached its mature growth and the more active layers absorb the sap juices from the heart.

One of the greatest drawbacks with which the woodworker has to contend is the shrinking and warping of the wood. It is essential that he understand why and how this takes place. After cutting, the tree shrinks in all directions, caused by the drying of the sap, the shrinkage from without toward the centre being more marked. As there is more moisture in the sapwood than in the heartwood, there is more shrinkage nearer the bark. The medullary rays, however, which radiate from the centre of the tree outward, and are formed of hard plates, shrink very little. The shrinkage of these rays tends to draw the ends of the rays together, and this causes cracks. As wood shows a tendency to split along these rays, logs are often halved or quartered, soon after they are felled, to as far as possible prevent cracking.

The quality of timber is obviously influenced by the soil in which it grows. Where the ground is damp and marshy, the fibre is of a spongy character, the excess of water preventing the healthy action of the sap in forming firm and compact wood. Basswood, willow and whitewood grows better in this marshy soil; hardwoods thrive better on dry, clay soil, and those of the pine group are best adapted to the sandy soils.

Cutting Glass Bottles.

Scratch a line with a diamond or file round the bottle. Take six ounces of lamp-black, two ounces of gum arabic, and three-quarters of an ounce of gum benzoin; mix, and make these into a pencil, light, and apply to the scratch.

Recent Books on Arts, Crafts, Etc.

Metal-Working, Jewellery-Making and Enamelling.

"METALWORK AND ENAMELLING: A Practical Treatise on Gold and Silversmiths Work and their Allied Crafts." By Herbert Maryon, Associate of University College, Reading. 8vo., 9 ins. by 6 ins.; 327 pp.; over 300 line illustrations, and thirty-one full page photographic plates; 7s. 6d. net. (Chapman & Hall, Ltd., London.)

The progress and development of art crafts have varied considerably during the last half-century, but within recent years two special features cannot fail to have struck the more observant of us. One—which we merely allude to in passing—is the growing taste, chiefly noticeable among artisans, for more artistic forms of woodwork, including fretted overlays and inlaying; the other is the remarkable hold which hand-made jewellery and enamelling have taken on art workers whose favourite medium is one of the finer metals. Some time ago we reviewed Mr. R. L. B. Rathbone's "Simple Jewellery" (Constable & Co., Ltd.), a practical handbook dealing with certain elementary methods of design and construction, written for the use of craftsmen, designers, students and teachers. In our recent November issue we referred at some length to Mr. Henry Wilson's "Silverwork and Jewellery," a guide in which the artistic aspects of high-class metal working were emphasised. In the last two volumes of *THE WOODWORKER AND ART CRAFTSMAN* we have had series of practical articles from the pen of Mrs. K. Cookson, on small silverwork, hand-made jewellery, decorative enamelling, copper, brass and pewter repoussé, etc., whilst in the first volume of *Home Handicrafts* (1907-8) there appeared an excellent series of illustrated chapters on jewellery-making by Mrs. Hadaway. All this tends to indicate—to some extent at least—a general movement towards artistic metalwork, an indication confirmed by the examples of beautiful work occasionally seen at industrial and arts and crafts exhibitions.

Without comparing Mr. Maryon's "Metalwork and Enamelling," just received, with other volumes on kindred subjects previously noticed, we have no hesitation in saying that such a book was needed and that it is sure of a cordial welcome by all metalworkers. Its chief merit is that it is thoroughly practical. In saying this we do not relegate to a second place books which treat of metalwork from the artistic and historical aspects. But Mr. Maryon realises that the successful craftsman must be practical, and that a practical volume, dealing exhaustively with every detail of the actual work, and giving information which it is essential to know, will in the first instance be of more service than one in which the theories of design and workmanship take a foremost place. The different branches of the work are treated distinctively in separate chapters. They are not spread all over the book. Thus the instructive portion is not only comprehensive, but readily accessible by reference to the table of contents. The chapter on tools and materials is supplemented (at the end of the book) by three most useful appendix chapters on suggested outfits for a small workshop, on various tables and standards, and on gauges—the two latter constituting a successful attempt to bring order out of the chaos which reigns in this country as to the gauges employed in measuring and weighing metals.

The scope of the volume comprises soldering for all

kinds of metals, four chapters being devoted to this all-important branch of construction. To filigree work two chapters are given, while stone-setting follows in three chapters. Then come, in single chapters, raising, spinning, repoussé (two chapters), mouldings, twisted wires (with six full-page plates of seventy-two examples), hinges and joints, metal inlaying, niello work, Japanese alloys, &c. Enamelling, in four chapters, includes champlevé, cloisonné, plique à jour, bassetaille, painted enamels, grisaille, etc., with the fullest instructions. Metal casting and construction, polishing, colouring and lacquering also come in for the fullest treatment. There is a chapter on setting-out, another on the making and sharpening of tools, and an exceptionally helpful one on practical designing.

The line drawings, prepared by Mr. Cyril Pearce, are excellent—free from that heavy touch which many art metalworkers seem to find it impossible to avoid. These, numbering well over three hundred, are carefully drawn and admirably grouped in page form. The bulk of the photographs, taken by Mr. Charles Lowen, and comprising many beautiful examples, are printed on fine plate paper and arranged at the end. The analysed table of contents is adequate for ordinary reference, but there is also an ample index. Printing and binding alike are in the best style. On general metalworking the volume is the most complete that we have yet seen; Mr. Maryon's style is direct and to the point, and, as few metalworkers will grudge an expense of 7s. 6d. for a standard work, we have no hesitation in giving the book an unqualified recommendation.

"The Studio."

Two of the principal articles in the November "Studio," are on the works of David Muirhead, the Scottish artist, and Anders Zorn, the Swedish painter and sculptor. There is a particularly fine coloured plate of Mr. Muirhead's "Woodland Pool," the quiet effect of a sunlit natural scene being admirably reproduced. An article on the Open Air Museum in Norway has many interesting photographs of exterior and interior woodwork, well worth some examination. The "Studio" now makes domestic architecture a popular feature, and although opinions may differ on the merits of elevations adopted in these days by some architects, there is much to approve and commend in the plans. Prominence is in this number given to a short descriptive article and eight full page lithographs by Joseph Pennell on the wonder of work at the Panama Canal. A glance at these leaves no doubt in the mind as to the marvellous nature of this enterprise, but hardly less interesting is Mr. Pennell's account of how, amid endless difficulties, he succeeded in securing his litho sketches.

On "Workmanship."

This is the title of a lecture by Mr. H. Wilson (author of "Silverwork and Jewellery," reviewed here last November), published in pamphlet form by Mr. John Hogg, 13, Paternoster Row, E.C., price one shilling net, or in paper boards, 1s. 6d. net. The subject is dealt with from the aesthetic and educational point of view, and although we have read the lecture with interest we confess that we prefer Mr. Wilson in the more practical mood which we recently admired.

Coloured Books.

"GREEN WILLOW AND OTHER JAPANESE FAIRY TALES." By Grace James. Sixteen full-page plates in colour, by Warwick Goble. 8 vo., 5s. net.

"WHITE EAR AND PETER: THE STORY OF A FOX AND A FOX TERRIER." By Neils Heiberg. Sixteen full-page plates in colour, by Cecil Aldin. Square 8vo., 6s. net. (Macmillan and Co., Ltd., St. Martin Street, London, W.C.).

The illustrations which Mr. Warwick Goble has provided for the series of Japanese fairy tales collected by Miss Grace James are beautiful examples of delicate colouring. The Japanese spirit is admirably reproduced, and, while richness has been attained where desirable, the prevailing tone is a subtle, soft, warm grey, which brings the whole series into perfect harmony. Were the sixteen plates arranged within a single frame there is not one feature, in design or colouring, that would convey any impression of discord. The pictures, moreover, while full of meaning, are suited to the young mind. The tales retold by Miss James are not for mere children, but for older boys and girls, and it is to these latter that Mr. Goble's designs have their appeal. One could almost wish that the plates could be had separately. Many are suitable for framing, while the complete series in a portfolio would be something for the water colour artist or designer to turn frequently to with delight.

Equal praise may be given to Mr. Cecil Aldin's fox and fox terrier illustrations to "White-Ear and Peter"—a suggestive story for the thinking boy. Mr. Neils Heiberg dedicates his volume to Lieutenant-General Sir Baden Powell, to boy scouts in every land, "to those who have eyes for the beauty of Nature," and to "lovers of animals and champions of the weak and defenceless." Mr. Aldin's animal and bird drawing is very fine, and his colouring rich without being overdone. Of the sixteen plates perhaps one might place first the wonderful cockatoo, "Clicko," with its delicate red and white against a pale purple-grey background. Following this close are the dog-fight, the old fox with her cubs, the ten crows "waiting," and the great eagle with White-Ear in its talons. In the whole series, however, there is the same idea of unity that we have just referred to in "Green Willow."

Both volumes are handsomely bound, and the colour-printing seems to be faultless, but with Messrs. Macmillan as publishers the finest quality of production may be taken for granted.

Illustrated Children's Songs.

"OUR OLD NURSERY RHYMES" and "LITTLE SONGS OF LONG AGO," illustrated by H. Willebeek Le Mair. 11½ ins. by 8½ ins. 5s. net each. (Augener, Ltd., 63, Conduit Street, London, W.).

It is a long time since we have seen anything so charming in the way of children's nursery rhyme books as these two volumes issued by Messrs. Augener, the well-known music publishers. In the first place the old, favourite and best-known rhymes have been selected, thirty in each volume. Both words and music are given, the tunes having been harmonised by Mr. A. Moffat, an expert in British Folk Songs. Of Mr. Le Mair's full-page illustrations in colour, one to each rhyme, it is difficult to speak too highly. Within recent years the *art nouveau* style has spread to children's books with, we fear, results alike disastrous to art and to child imagination. Here, however, we have all that is best in the new linked with the spirit

of what is quaint and old-fashioned in these well-worn, well-used rhymes. Mr. Le Mair is original in his designs and in his colour treatment. At the same time he never seems to forget the child mind, and the greatest merit of his work is that every page will appeal to and stimulate a child's imagination. Whether the artist or the publishers, or both, are responsible for the general scheme of these two books the result is an unqualified success; and with sixty of the best known nursery rhymes, given with music, and illustrated with these daintily drawn and delicately coloured plates, parents have an opportunity of being provided with a never-failing source of entertainment for their children.

A Guide for the Painter in Oils.

"THE TECHNIQUE OF PAINTING." By Charles Moreau-Vauthier, with preface by Etienne Dinot. Demy 8vo., 261 pp., 24 plates in colour and black and white. 10s. 6d. net. (William Heinemann, Bedford Street, London, W.C.).

The name of the translator of this interesting and useful volume by Mons. Moreau-Vauthier does not appear on the title page, but the work seems to have been carried out with fidelity and care. The word "Technique," let us explain, refers not so much to manipulation so far as brushwork is concerned, but to the use of colours and media in their more scientific sense. The subject is necessarily dealt with from the historical standpoint, the development of technique being traced from pre-historic times down to the present day. The sense of colour in different periods is analysed, and sections are devoted to the various processes: (1) Opaque painting—pastel, distemper, body colour (or gouache), and wax-painting; (2) transparent painting—water-colour and glazing; (3) mixed painting—fresco, tempera, oil-painting, encaustic, and Rafaelli or solid oil-painting. There is a chapter on the "Diseases of Pictures," in which deterioration from various causes is considered. Causes thus dealt with are faulty bases (*i.e.*, wood, cardboard, paper or canvas ground), perishable sizes, oils, varnishes, &c., whilst cracking and the deterioration of colours come in for exhaustive treatment. Passing from this M. Vauthier goes on to deal with the preservation and restoration of pictures, and for the benefit of connoisseurs adds a section on forgeries and on how to look at pictures and scrutinise technique.

The numerous plates are of an unusual character, and merit special remark. They are specially reproduced from original paintings or frescos by old masters for the purpose of illustrating method in technique. A small photograph of the complete picture is shown, and beside it is given a large reproduction in colour of some detail feature. The blocks from which these illustrations are printed are particularly clear, and the method to which attention is being drawn can be easily followed. To those who practise oil painting, or who understand the technique of painting sufficiently to enable them to understand and appreciate a good picture, this volume with its instructive plates will form something of an education.

Polvar Polish.

French polishing in the ordinary way is perhaps one of the most difficult arts to acquire. It is seldom that the unskilled amateur can achieve early success, and for this reason Polvar is recommended. By its aid the novice can obtain excellent results without the aid of oil or spirit of any kind. It can be used on plain wood or for re-polishing.

Panelling. What It Is and How to Do It.

1.—Sham Panelling.

PANELLING, in the ordinary sense, consists of a comparatively stout framing filled in with thinner wood, which, breaking up the level surface, gives a more or less good effect as compared with a flat surface without any break. It may be formed by a great many methods. We may have sham panelling and real panelling, plain and moulded, flat and raised, and so on almost

In Fig. 1 we show the elevation of a panelled dado, made in the plainest possible style; one which lends itself to sham work, the difference in the real and the sham being almost impossible to detect. As for this purpose the sham is quite as good as the real, we will make a start with a description of this sham panelled dado.

Provided that the walls are straight and square, the making of this will be easy, all that is required being to board them up flat with a thin board and then fix the framing, consisting of the stiles, A, the rails (bottom and top) B, and the muntins, fitting and fixing them in the order given. The

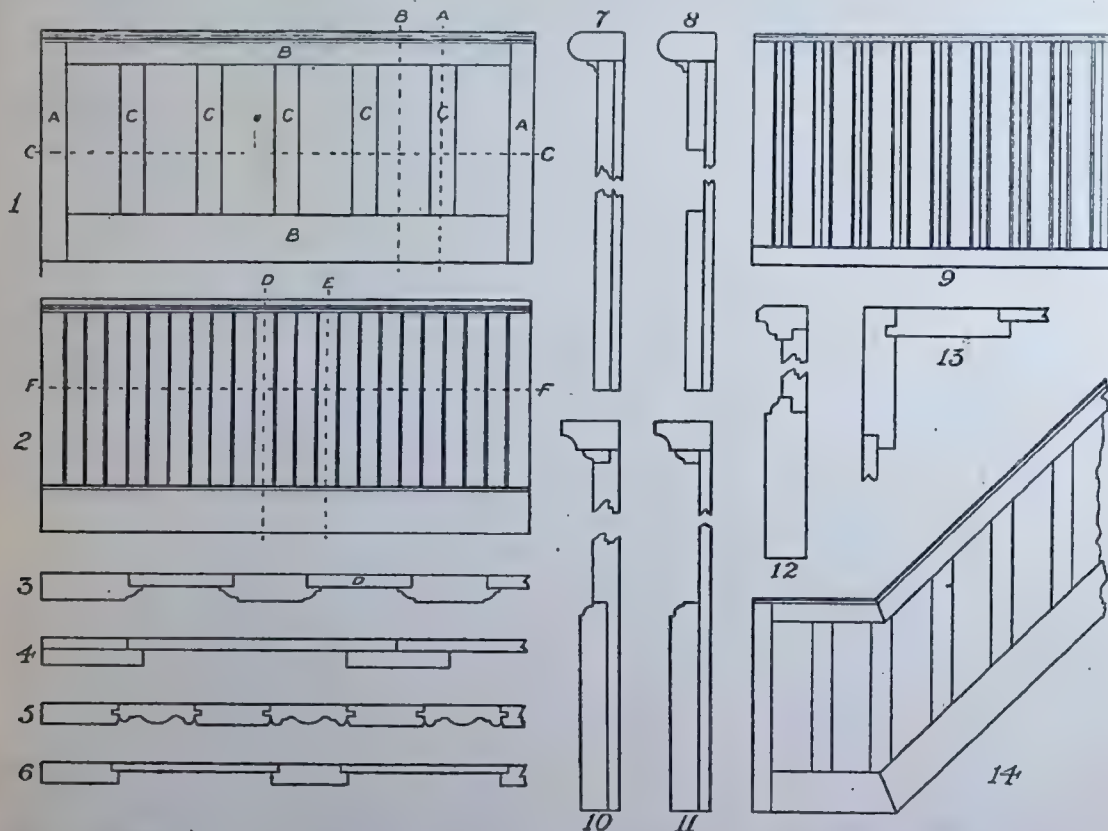


FIG. 1.—ELEVATION OF PLAIN SHAM PANELLING. FIG. 2.—ELEVATION OF MOULDED SHAM PANELLING. FIG. 3.—SECTION OF FIG. 2 ON LINE FF. FIG. 4.—SECTION OF FIG. 1 ON LINE CC. FIG. 5.—HORIZONTAL SECTION OF FIG. 9. FIG. 6.—ALTERNATIVE SECTION FOR FIG. 1. FIG. 7.—SECTION OF FIG. 1 ON LINE A. FIG. 8.—SECTION OF FIG. 1 ON LINE B. FIG. 9.—ANOTHER STYLE OF PLAIN AND MOULDED PANELLING. FIG. 10.—SECTION OF FIG. 2 ON LINE D. FIG. 11.—SECTION OF FIG. 2 ON LINE E. FIG. 12.—VERTICAL SECTION OF FIG. 9. FIG. 13.—JOINING PANELLING AT RIGHT ANGLES. FIG. 14.—STAIRCASE DADO IN SHAM PANELLING.

indefinitely. Therefore, we propose to show in this series of articles how the various kinds of panelling are formed, and the places and positions for which they are most suitable.

There are certain purposes for which soft wood is preferable to hard; and also where the reverse is the case, and where it is almost imperative that hard wood be used. These will be pointed out as we proceed.

first lot of boarding will then of course form the panels.

Vertical sections on lines A and B respectively, are shown at Figs. 7 and 8, and a horizontal section on line C is given in Fig. 4. If this kind of panelling is to prove successful, it is necessary that the joints in the "panels" should come so that the muntins will cover them as in Fig. 4, and to attain this end the wood may have to be cut up

into irregular widths. The panel boards must also be of even thickness throughout, and must be fixed very firmly; screws should be used for preference, and the wall should be plugged. If care is taken that all the screw heads will be hidden by the stiles, rails, or muntins, there will be nothing unsightly about it when finished.

The wood which will form the framing must be even in thickness, also gauged accurately to the widths required and the edges planed quite straight and square. All the parts will then be put together as though they were one solid whole. However truly the framing is planed to thickness, there will be a certain amount of inequality at the joints; these must therefore be planed off after the panelling is finished.

The bottom rail should always be wider than the other framing. Double the width, as shown in Fig. 1, is as a rule correct. The stiles, muntins and top rail should all be the same width, and in making panelling which comes together at the corners, either internal or external, the stiles should be so arranged that they appear of equal width when finished. Thus, in fitting to an internal angle, one stile must be the thickness of the panelling *wider*, and for an external angle one must be the thickness *less* in width. For ordinary panelling 4 ins. will be found a suitable width for stiles, rails and muntins, the bottom rail to be as wide again, and the panels to show some 8 or 9 ins. wide according to the way they space out.

While we are on dado work, we will show another kind of sham panelling which has a good appearance and is very easily made and fixed. The elevation of this is shown in Fig. 2, and sections on lines D, E and F are given in Figs. 10, 11 and 3 respectively.

In this style, narrow panels as D are fixed to the wall at intervals as required, and the muntins are rebated to fit over them as in the section Fig. 3. No top rail is required in this kind of dado, the capping serving all purposes. The bottom rail forms a skirting, or, more properly speaking, a plinth. The skirting and also the lower member of the capping should be on to the thin panels, and the muntins should be shouldered so that the plinth will come as Figs. 10 and 11.

The procedure in fixing this dado is:—First, the panels, which must be correct in width and thickness; then the muntins, which must be rebated to fit the panels and shouldered all alike to take plinth and capping; then the plinth; and lastly the capping. Or the above may be varied by fixing the plinth next after the panels D, following on with the muntins.

Yet another style, easy but effective, is shown in Fig. 9, the horizontal and vertical sections being as Figs. 5 and 12. Here the plinth is rebated at the back, and the boards forming the panelling proper are shouldered so as to fit down behind, as in Fig. 5. They are also cut at the top, so that the capping will fit on to them in the same way as the plinth. As a rule this is all the fixing required.

As the horizontal section (Fig. 5) shows, the

panels are really tongued and grooved boards, plain and moulded being used alternately. This method will be found a ready means of forming a cheap and effective dado.

Fig. 6 shows an improvement on Fig. 1. The effect as regards the appearance is the same, but the actual result is much more workmanlike and satisfactory, while the labour and materials required are very little more.

Sham panelling lends itself particularly to staircase dados, as Fig. 14, an effective dado being formed far more easily by this method of building up than in making the actual panelling. In the latter case bevelled work is not easy, but in the former there is little difference whether square or bevelled.

Fig. 13 illustrates the necessity of having one stile wider than the other for internal angles, and also shows a good method of fixing them together at the corner. The tongue and groove keep each piece in its proper place, which is sometimes rather difficult with a plain joint.

Any of the panelling shown and described here will do equally well in soft or hard wood, and for the "panels" (that is, the thin portions posing as panels) we can honestly recommend three-ply wood—ordinary alder if it has to be painted or stained, or the same faced with the particular wood we are using if made in hard wood. In the latter case the grain should run vertically at the face. In the former it is immaterial which way it runs, but it is very important that, whether the hard wood faced or the alder throughout is used, it must be of good quality; otherwise there will be trouble with blisters.

If the wall where the panelling has to be fixed is inclined to be damp, it must either be treated with a damp-proof solution, or three ply wood should not be used. Although supposed to be waterproof, it is not fair to put it to too severe a test in this respect. It will stand anything in reason if of good quality.

(To be continued).

How to Make Doors.

One sometimes feels inclined to ask why the woodworker, who is often so ready to attempt difficult work in other ways, so rarely tackles the making of his own doors. Perhaps it is because he does not know how to set about it. If he reads "Door-Making," a sixpenny handbook (Woodworker series) of 88 pages and 137 illustrations, he will not only discover that the ordinary door is an interesting piece of woodwork to construct, but he will find also full directions for setting-out and making the various types of doors in every-day use. The outstanding merit of the book is that it is thoroughly practical from beginning to end. The writer is a practical man who has himself made every door which he describes, and no worker of average ability could fail if the instructions given are carried out. Two useful concluding chapters are on (1) door frames, and (2) on fitting and hanging, and a handbook of the sort is well worth buying, even if the reader has no immediate intention of adding a new or replacing an old door. Price Sixpence, or post free for Sevenpence, from THE WOODWORKER AND ART CRAFTSMAN, 57, Farringdon Road, London, E.C.

Hall Stand with Cupboard for Treadle Sewing Machine.

ON more than one occasion the suggestion has been made to us that we might show here a design for a hall stand, with cupboard space below for holding a treadle sewing machine. The rough sketch given below, with the details at Fig 2, may therefore be of service to readers who may care to adopt this useful idea.

To take the sewing machine easily there should be a couple of inches clearance in the cupboard at both sides, which, with the thickness of the ends, will make the cupboard 3 ft. 6 ins. wide. An extension at both sides of cupboard of 9 ins. would afford accommodation for sticks and umbrellas, making a width over uprights of 5 ft. Should this prove wider than space will allow, one extension only might be added, fitting at the other side the patent umbrella clips and drip pans, now often fitted where space is limited and compactness is desirable. It would, however, be necessary in the latter

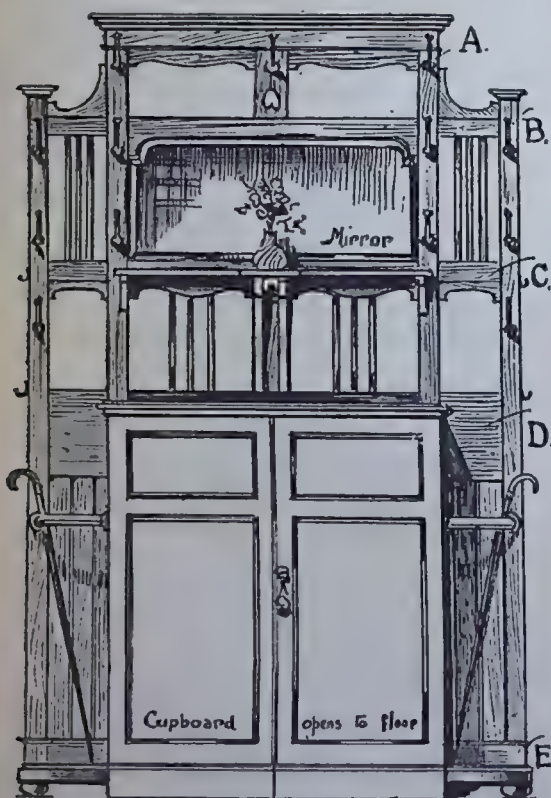


FIG. 1.—HALL STAND, WITH CUPBOARD FOR HOLDING A TREADLE SEWING MACHINE.

case to fit a bottom to the cupboard, dovetailed in, to stiffen the construction, which would necessitate the cupboard being 1 in. higher than before, viz., 3 ft. 7 ins.

As sketched here, the cupboard doors open to the ground, the space inside in the clear being 3 ft. 5½ ins. high, allowing 1½ ins. clearance in height for machine. Above the cupboard top (12 ins. to 13 ins.) are fitted a

shelf and a serviceable mirror, the total height of stand being 7 ft. Cornice shows 1½ ins.; frieze rail below it, 2 ins. wide. Shapings may be taken out of pieces 2 ins. wide by 16 ins., including joints (see A.) Rail at B is 2 ins. wide, and at C 2½ ins., the slats between being 14½ ins. long (including joints) by ½ in. by ½ in. Sight size of mirror can be about 3 ft. 1½ ins. by 14 ins., with 1 in. bevel. Rail at D is 9 ins. wide, and bottom rail (E) 4½ ins. wide, of ¾ in. thickness net, with 3 ins. by ½ in. or ¾ in. grooved and tongued boards panelled between. The shaped tie piece which holds the drip pan can be

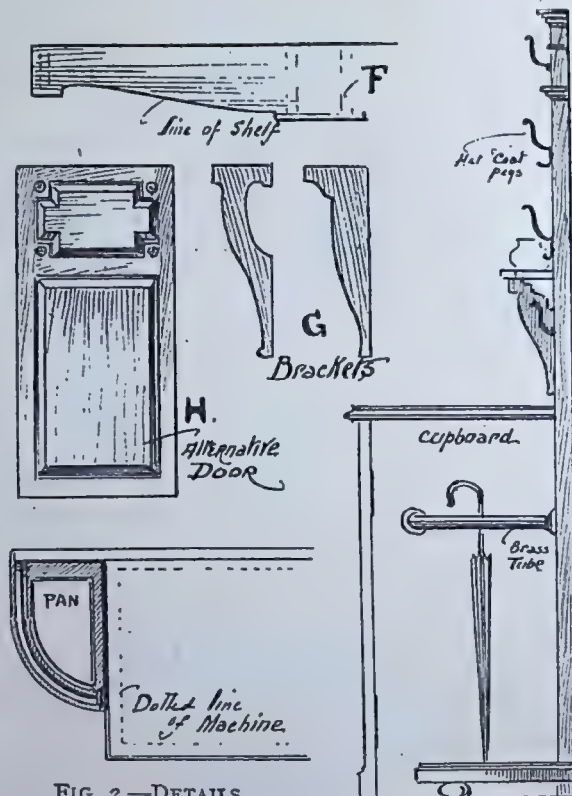


FIG. 2.—DETAILS.

of ½ in. stuff 2 ins. wide, tenoned right through and wedged to back of stand and cupboard ends. The four main uprights can be of 1½ in. thickness net by 2½ ins. wide, the outer ones being 6 ft. 3 ins. long. Cupboard doors hinge on ends, so as to leave the enclosed space clear, and are framed up of 2½ ins. by 1 in. stiles and rails, mortised right through and wedged with moulded panels of ½ in. thickness, beaded in from the back. Lacquered brass supports, ¾ in. diameter, are shown quadrant shaped for the umbrellas.

An end elevation of the stand is sketched at Fig. 2, showing the cupboard as 19 ins. deep in the clear, with brass rail and drip pan supported on ball feet. The upper shelf and brackets, and fitting of hat and coat hooks are also indicated. The half plan shows the shaped brass rail and drip pan, with a dotted line indicating the sewing machine where contained in the cupboard. A suggested shaping for the shelf at F will be an improvement on a straight front edge, and the supporting brackets might also be shaped (G) to assist the effect. The doors also can be elaborated by fitting panels as indicated at H.

The Question Box.

As one of the main objects of THE WOODWORKER AND ART CRAFTSMAN is to help its readers, questions of general interest dealing with any branch of handicraft will be answered on this page.

As it is impossible to reply fully in these columns to all queries received, questions on subjects within the scope of this Magazine are replied to by post under the following conditions:—(1) Questions dealing with distinct subjects should be written on different slips, on one side of the paper only, and the sender's name should be written on the back of each. (2) Questions should be accompanied, wherever possible, with fully dimensioned sketches, and correspondents are recommended to keep a copy of their Questions for reference. (3) A stamped addressed envelope (not post-card) should be enclosed. (4) Questions will be answered as early as possible after receipt, but when sketches have to be prepared, or when research has to be made, a short interval must elapse before the Reply can be forwarded. The insertion of Replies in this column cannot be guaranteed, but all Replies of general interest will be given when space permits. All Questions should be addressed to The Editor, THE WOODWORKER AND ART CRAFTSMAN, 57, Farringdon Road, London, E.C.

Upper Part of Mahogany Sideboard.

[328] A. P. H. (Wisbech) writes:—"I am making a mahogany sideboard of (roughly) the following dimensions:—Length, 5 ft. 6 ins.; height, 3 ft. 3 ins.; width,

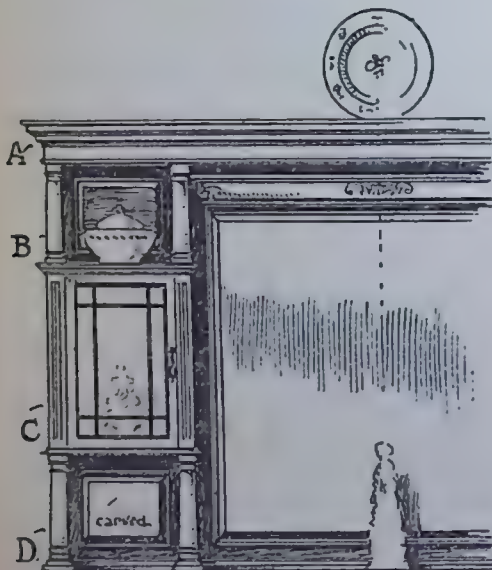


FIG. 1.—UPPER PART OF SIDEBOARD (No. 328).

2 ft. 4 in. With regard to the upper part, however, I am in a difficulty. I do not want to run it up higher than about 3 ft. 6 ins., and should like to put a cupboard at each side with glass doors. Will you please furnish me with a design? I do not want it plain, nor yet too elaborate. The sketch enclosed will give you some idea of my requirements."

REPLY.—We have sketched you a couple of suggestions for the sideboard back you write about, either of which should work out satisfactorily to the dimensions given, viz., 5 ft. 6 ins. by 3 ft. 6 ins. Fig. 1 has a plain cornice and frieze 5 ins. high, allowing 2½ ins. for upper mould, ¾ in. for lower mould, and 2½ ins. for frieze

between (A). The upper columns (B) are 10 ins. long by 2 ins. diameter, and show a bevelled wood panel between. The cupboard should show about 18 ins. high by 14 ins. to 15 ins. wide over all, the uprights (C) carrying three flutes each. The doors (1½ ins. by 1 in. framing) have barred and glazed panels in simple fashion. A glass shelf may be fitted inside, and a mirror may be added to the inside back if you wish to lighten the effect. The lower columns (D) should be turned and slightly tapered, 2 ins. diameter, and may be 9 ins. high to cupboard, or 12 ins. as drawn. The lower panel between might be improved with a little neat carving, although the present tendency is to keep the panels plain. The mirror would come out at about 3 ft. wide by 2 ft. 6 ins. high, with 1 in. bevel. The lower columns have projecting moulded toes, and as a further suggestion the cornice may be dentilled and the mould below carved up egg and tongue pattern. Top can be fitted with dustboard and a stop groove or fillet for plates if desired. The alternative back (Fig. 2) has a cupboard 2 ft. high by 15 ins. wide, with 1½ ins. by 1 in. panelled glazed door—one glass shelf inside. The cornice may include a small dentil, and the shaped ogee frieze is carved acanthus at angles and in the centre. The mould below cupboards, 2½ in. wide, is also carved with nulling and acanthus at angles. The lower 2½ in. columns should be turned up with a

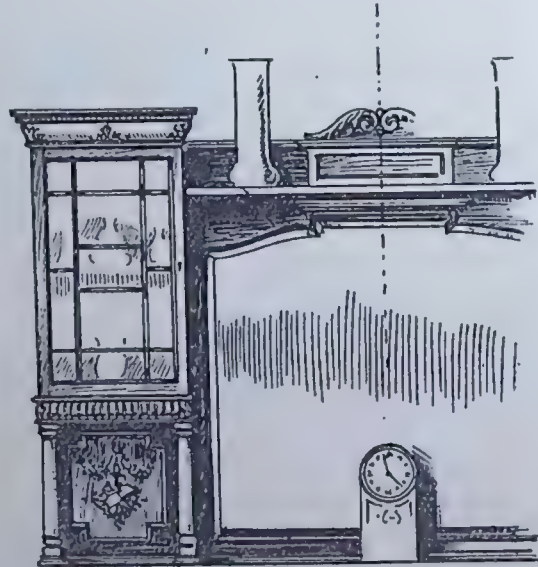


FIG. 2.—ALTERNATIVE DESIGN (No. 328).

swell in centre, and may be 14 ins. to 15 ins. long. A shelf, which may be shaped to agree with top of mirror, is fitted between cupboards, and is shown with a 5 in. moulded back rail above it, a small leaf carved scroll pediment ornamenting the centre. Size for mirror is 3 ft. wide by 2 ft. 6 ins. high, and the framing between lower columns is shown with broken corners, moulded and carved with trophy panel.

Liquid Metal Polish.

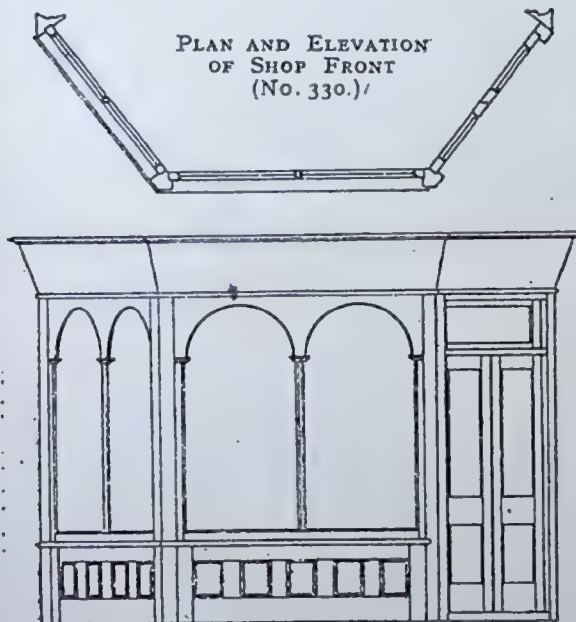
[329] J. J. Y. (Hornsey).—A useful recipe is 8 ozs. paraffin, 12 ozs. clear oil, 2 ozs. oleic acid and 8 ozs. of prepared whiting.

Timber for Shop Front.

[330] J. T. O. (Liscannor) :—In reply to your enquiry as to timber for shop front, illustrated in our recent December issue (Question No. 324), your back posts should be formed out of 6 ins. by 4 ins., and your angle posts out of 8 ins. by 5½ ins., which will give sufficient strength for your purpose. An oak sill should run round the bottom, being kept back the thickness of panelling (2 ins.) at the front and on the left, but at the right it may be brought to the front and form the door sill.

The sill under the window should be 3 ins. thick, bevelled off to 2 ins. at the outside edge, and should be quite three-eighths of an inch under the sash, this latter to fit over the sinking. The front edges should project beyond the posts about an inch, fitting round them so that they meet at the angle as shown. A head must be tenoned into the angle posts at the top of sashes and fan light, but the wall posts should be tenoned into this, so that the ends may project beyond for insertion into the wall, which will form a means of fixing the new part to the old.

Joists to carry the boarded top will be inserted into the existing wall, the front ends being carried by uprights, sloping outwards, to which the fascia will eventually be fixed.



Tongued and grooved boards should be used for the top; they should overhang to form the top member of the cornice in front, the side pieces being mitred to this to correspond.

The door posts will tenon into the sill at the bottom, the head and transom being tenoned into the posts in the usual way. If you use the semi-circular heads to the windows, the wide top rails will tenon into the stiles, but the bars will be best fixed by dovetailing them up into the rail with a slot dovetail, keeping the top rail the depth of the rebate less in thickness. The glass will then fit up behind the rail, and may be rectangular. The shaped top rail may be left unmoulded; the bars and stiles will be moulded, and the bottom rail plain bevelled only. The neck moulding

will form the division between the moulded bars (and stiles) and the square top rail. The panelling under the window should either be flush panelled (bead butt, or bead flush), or belection-moulded. You will probably know the meaning of these terms. The brick foundation should be brought up slightly above the ground, so that the soil will not affect the wood. We trust that these few additional details will enable you to carry through your work to your own satisfaction and credit. For reference we repeat the sketch previously given.

Wood for Workshop.

[331] G. M. (Salisbury), writes :—"I am thinking of putting up a timber workshop, and I want your opinion as to whether 2 ins. by 2 ins. would be strong enough for framing. I am thinking of about 10 ft. by 7 ft. for size, and should have to make it in sections of about 4 ft. so as to get it through an ordinary house, the height to be the length of section. Also would you think it best to use 1 in. matchboard for the job, and no lining, or weather board with a lining of, say, ½ in. matchboard? Will you kindly let me know what I can get the matchboard or materials you recommend per square foot, also 100 ft. run of framing timber?"

REPLY.—You will find that the inch matchboard will suit best for your shop, and it will still be an improvement to line it inside with thin board. Weatherboard does not do for small sections. The 2 ins. by 2 ins. scantling will do for your framing provided that you tie the sides in at the top. One cross tie will be sufficient. If you intend to have a floor you should have stouter framing for the bottom—say, 3 ins. by 2 ins., and this should be kept up from the ground. The 2 ins. by 2 ins. scantling you should be able to get at about 7s. per hundred feet, and the 1 in. matchboard at about 13s. per hundred square. We are sorry we cannot well give you quantities to be useful, as we do not know your idea as to position of windows and door or style of roof you intend to introduce.

Silver Grey Stain.

[332] A. G. L. (North Shields), enquires as to the best recipe for a silver grey stain for wood.

REPLY.—Dissolve 1 part nitrate of silver in 40 parts (in weight) of clean water. Apply two coats of this to the wood, with a soft brush, a large one for broad surfaces. Afterwards submit the wood to the action of hydrochloric acid, finally washing off with ammonia to neutralise action of acids. Dry in a dark room, when it may be oiled and polished in the ordinary way, using white or transparent polish. This stain is very suitable on both poplar and beech, and also on pine woods.

Display Cabinet—Under Part.

[333] J. W. (Walkden) writes :—"I am making a display cabinet from Design Fig. 2 (No. 244) in your April, 1912, issue. I like the design if there were a little more work in it. Could you give sketch and suggestions for making it a little more elaborate, with a different pattern of upper shaped back? I should make it 3 ft. 3 ins. wide (width of carcass). What would be the right height to table top? I may tell you that I have been a constant reader since I bought my first copy on April 15th, 1905. I have made most of my own furniture, including oak bedroom suite, sideboard, overmantel, and I have just finished

the mahogany Davenport writing desk from design in the December, 1911, number. Having inlaid it with banding as you suggested, I should like this introduced in the cabinet. I have always found the information I needed in your columns up to now and if I am asking too much I hope you will excuse me. As I am anxious to start the job a reply at your earliest opportunity will greatly oblige."

REPLY.—Either of the sketch-suggestions offered here should prove of assistance to you in making the alterations to the upper part of cabinet referred to. Fig. 1 has a moulded shelf, say, 7 ins. above table top, supported by turned and carved columns. The mirror with shaped upper corners, would come out at 24 ins. by 12 ins. high. The panels on either side of glass and under shelf are indicated with satinwood banding and will offer an opportunity for introducing a little neat inlay. Inlaid fans are also shown in corners of shaped mirror. The cornice and frieze should be carefully worked out to get a neat effect. The cornice mould, say 1½ in. wide, is shown dentilled, the dentils being either cut or inlaid. The frieze is inlaid with ½ in. banding, with plain bead or astragal mould, the height over all being 2½ ins. The drawers in lower carcase are also inlaid with banding, and may have a scrolled inlay introduced with a couple of drop ring handles instead of the central handle as shown. Height to the table top would be from 3 ft. 3 ins. to 3 ft. 6 ins. for the larger sized cabinet, and the back sketched (Fig. 1) would work out at

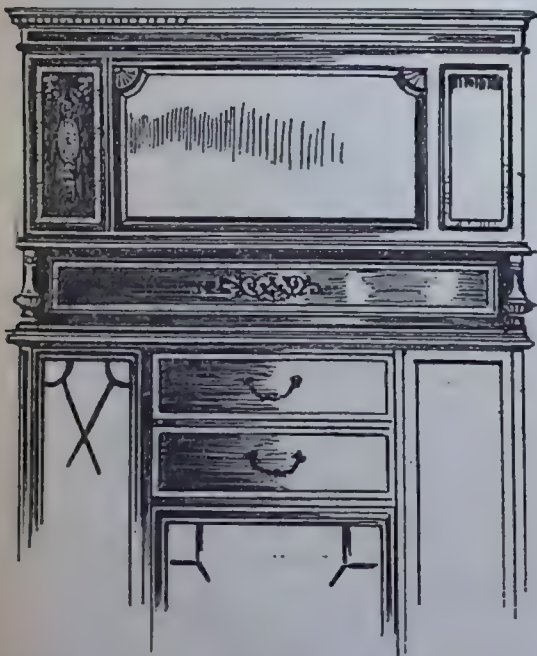


FIG. 1.—UPPER BACK FOR DISPLAY CABINET (No. 333).

24 ins. high. Fig. 2 would involve a trifle more work, but would give scope for more elaborate inlay. The wing panels are broken each by a shaped shelf, as indicated by the vases, and a lower shelf extends the full length of back, supported in the centre by three shaped brackets. At the extremities of this shelf (in line with the wing panels), a couple of shaped

bases are indicated, these being about 3½ ins. high, making the shelf 4 ins. above table top. These bases can project 4 ins. to 5 ins. from cabinet back and may also be banded or inlaid with swag and patera in simple style. The cornice has a three member mould

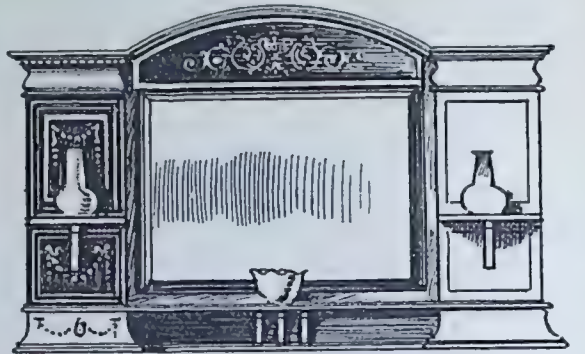


FIG. 2.—ALTERNATIVE SKETCH AND DETAILS OF UPPER BACK FOR DISPLAY CABINET (No. 333).

as capping the full length, with additional dentilled mould and a shaped and projecting frieze applied above the wing panel mould. The size of mirror shown is 22 ins. by 15 ins., and the height of back over wings is 23 ins. with a 3 in. rise in centre. The shaped side shelves (A) may finish 7 ins. by 4½ ins. by ½ in., and the lower shelf (B) 3 ins. wide in centre by 5 ins. or 6 ins. at ends as preferred. Rough sketches of bracket shaping (C) and cornice (D) are given for Fig. 2, together with cornice (E) and turned column (F), for Fig. 1. We may add that we are always pleased to hear from old readers of THE WOODWORKER, and are glad to know that it has proved of such good service to you.

Greenhouse.

[334] W. T. (Durham) writes:—"I am making a lean-to greenhouse, size, 18 ft. by 11 ft. wide. I intend to have a brick wall, 2 ft. 6 in. around, and make the woodwork 6 ft. high against the kitchen wall. I have eight lights, 6 ft. by 4 ft. 6 ins., which I intend to use for the roof. Would 5 ins. by 2 ins. wood do for roof support, and or front? What drop should I allow?"

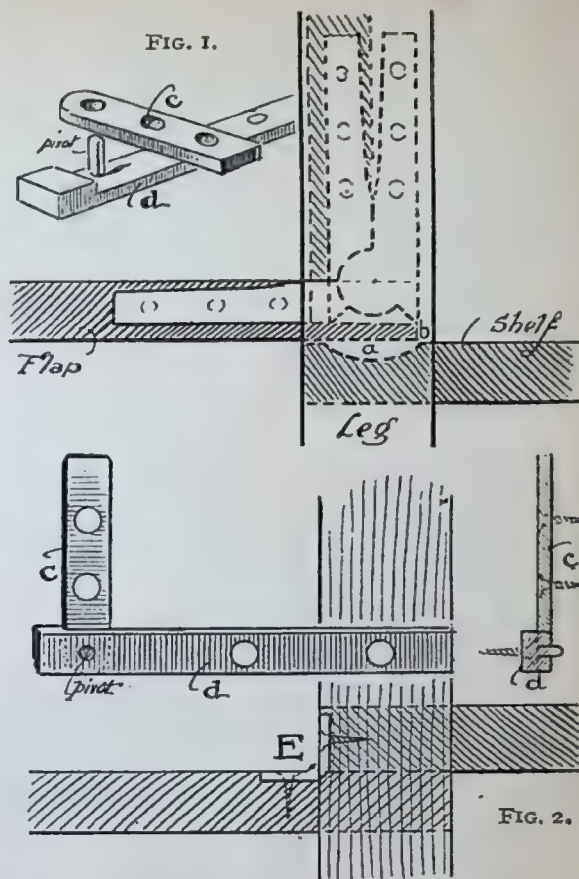
REPLY.—Your suggested arrangement will do very well, but you need not have any woodwork against the wall at the back. You should fix a piece of scantling about 4 ins. by 2 ins. along the wall at the top of pro-

posed roof, and fit the rafters on to this. Your 5 ins. by 2 ins. will do for the rafters, and the bottom part should be cut away to take the lower lights, allowing the upper ones to overlap them, and to slide downwards for ventilating purposes. The same scantling will do for the main timbers at the front, nailing on strips to form the necessary rebates. As the house is 11 feet wide, you should have at least a 3 ft. fall in the roof. This will mean that you must go higher than you state against the kitchen wall, and your 6 ft. lights will not be long enough for the roof. To obviate this difficulty we should advise you to allow the top of the roof to be at least 9 ft. up the wall, and make the house slightly less in width to allow for the necessary overlaps and the overhanging at the eaves. You should not board up the end, but frame it for glass. Of course, one end will have the door in it. Instead of butting the lights together on the roof, and covering with a fillet, you will find it a better plan to fix a strip up the back of the rafters, so as to form a rebate at each side for the light to rest in. Do not allow the upper course of bricks to hang over the others, but keep the bricks all level, and let the wood sill overhang. This will keep the wet out much better. Do not use tar as you suggest; paint is much better and nicer to use. By following out these suggestions in connection with your own ideas, you should manage to erect a decent house.

Quadrant Hinges for Folding Table.

[335] L. R. L. (Manchester) writes to ask for further particulars regarding the fitting of quadrant hinges, as illustrated and described in our issue for October, 1912, page 265.

REPLY.—The sketch, Fig. 1, in October issue, referred to fixing the hinge in such a position as would stop the flap, when down, so that the underside was in line with the upper surface of shelf fitted between the table legs. The edge of flap finishes flush with the edge of shelf, and when closed up there would be an open space between the upper side of shelf and lower edge of flap. If you require the flap to close without this space, it will be necessary to cut the shelf as indicated for clearance (A), as the flap revolves as in the accompanying sketch (Fig. 1), which shows the hinge open and flap down, with a dotted indication of the flap up. The corner (B) might also be rounded off. We have never had occasion to fit this type of hinge in the manner suggested. Apparently it will require great care in adjusting, and trouble will be added should there be only a slight difference in any pair of them—little items that will crop up in practice although the thing works out well on paper. We may add that we think there is another type of hinge that would answer your purpose in a somewhat simpler way, such as is used on certain pieces of French furniture. We have not a pair at hand, but give a sketch (Fig. 2) from memory, which may assist you to procure should you desire to use them. It consists of two separate arms, the one (C) with three holes—two countersunk for screws and one not countersunk for the entry of a pivot. The arm (D) has two holes countersunk for screws and a projecting pin for pivoting, and the end terminates with an extra thickness of the metal. In fixing the arm, C is screwed to the table leg, the arm (D) to edge of shelf, so that the pin can enter its corresponding hole. Working on the pin the thickened end forms a stop for the arm when at right angles, pressing against the side of C, as indicated in the section. Another method of hinging the flap so that no space is seen between the lower edge of it and shelf would be to



QUADRANT HINGES (No. 335).

See also October issue, 1912, page 265.

use ordinary brass butt hinges of suitable size, and fix as indicated in the sketch E, allowing the lower part of flap to project under shelf for leverage against weights placed thereon when down.

Setting out Boards and Rods.

[336] J. S. (Glasgow), writes:—"I served five years at cabinet making in a small shop where drawing boards were not used. When my apprenticeship was finished I left the trade. Now, after eight years, I am forced by circumstances to return to it. I have started work in a shipyard, but am handicapped as I am unable to read a board or draw a rod. I would be very grateful to you if you could inform me how to overcome this difficulty, or let me know of any book that would help me."

REPLY.—So far as we are aware there is no book published on this subject; in fact, many shops dispense with the boards entirely. However, to assist you we will prepare a short article on the setting-out board for a definite piece of work, thus showing the principle. Personally we do not consider boards necessary, and much prefer a rough elevation, with a rod showing the mortises, tenons, &c., and every man should be able (and also be allowed) to set out the rod for himself.

Corner Settee Fitment.

[337] S. B. (Shrewsbury) writes :—" I made a corner shelf some time ago. Now I should like to make a corner seat, using the said shelf. I would like a simple but effective design, and some idea about the dimensions of wood to be used. I thought of covering the back and cushions on seat with tapestry."

REPLY.—As the corner shelf you refer to is 3 ft. by 3 ft. by $4\frac{1}{2}$ ins., you might make the seat 3 ft. 6 ins. by 3 ft. 6 ins., or 4 ft., to stand under it when hung in position on the wall. A rough suggestion is offered (Fig. 1) for the seat, showing loose press-in pads for the back and loose cushion stuffed up to, say, 3 ins. thick for the seat. Height of seat, exclusive of cushion, 14 ins. to 15 ins.; and depth, back to front, clear, 18 ins., which may be increased to 21 ins. if a deeper seat is specially required. Roughly speaking the higher the seat the shallower it may be; so, conversely, if you deepen the seat, a trifle should be taken from the height for the average individual. By bearing this little formula in mind the necessary allowance for an extra short or tall person will not be forgotten. Height of back can be 2 ft. 3 ins. above seat, or 3 ft. 6 ins. over all from ground. For this, four uprights, 3 ft. 6 ins. by $2\frac{1}{2}$ ins. by 1 in., seat rails 3 ft. 4 ins. by 6 ins., and top rails $4\frac{1}{2}$ ins. wide, should be got out, the back framing being rebated to receive the pads, which can be slipped into position from behind. Legs can be 2 ins. by 2 ins., tapered to $1\frac{1}{2}$ ins. at ground, with $1\frac{1}{2}$ ins. by 2 ins. rails dovetailed into tops of legs with shaped apron pieces between. The seat top may be boarded over with $\frac{1}{2}$ in. stuff, with front edge to project 1 in., and be rounded off for comfort. Moulded cappings and base blocks are shown to the back legs, and a fret-cut heart or other shape in top back rails as a simple relief. You can make something a trifle more

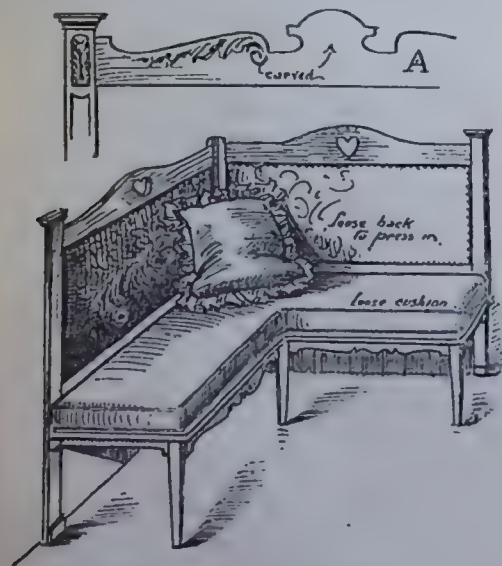


FIG. 1.—CORNER SETTEE FITMENT (No. 337).

elaborate without overdoing it, by shaping the upper rails as indicated at A, adding a little fretted and carved shaping, as noted with incised lines on the back uprights. A plan of seat is sketched at B, Fig. 2, showing the 2 in. rails as doweled, or mortised and tenoned, with the angles glue blocked to stiffen them

when entered into legs (2 ins. by 2 ins.), the back in this case being separately made to be screwed or be loosely doweled into position. If you do not require to stuff the whole length of the back panels you might achieve a neat effect by making the back to the design shown Fig. 2. This shows a 6 in. rail at top, shaped and

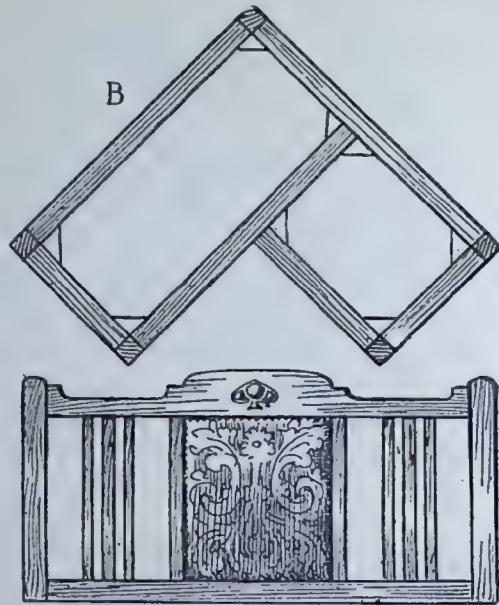


FIG. 2.—CORNER SETTEE FITMENT (No. 337).

carved with some simple-shaped symbol. To those who cannot carve it is often a convenience to obtain a suitable cutting of Lincrusta, which can be let into a rail with pleasing result. The centre pad as sketched is 18 ins. wide by 21 ins. high, the space between being panelled with sets of three slats, $1\frac{1}{2}$ ins. wide by $\frac{5}{8}$ in. thick, slot-tenoned into position.

EDITORIAL NOTICES.

Contributions.—The Editor invites correspondence and original contributions on all subjects relating to woodwork and other handicrafts. All MSS. should be accompanied by a stamped and addressed envelope for return if unsuitable.

Books for Review, price lists, tools materials, etc., sent for inspection, enquiries and all correspondence relating to the literary portion of the Magazine should be addressed to the Editor.

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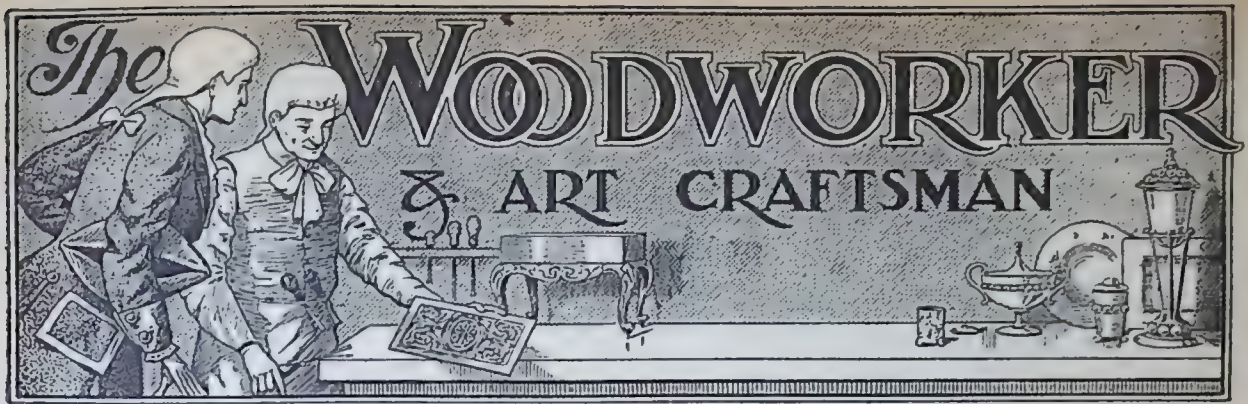
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VOL. XVII. No. 230.

FEBRUARY, 1913.

DESIGN FOR THE MONTH.

Carved Hall Shelf.

AS a rule the woodcarver—especially the amateur—prefers a piece of work in which there may be a good deal of carving, but little in the way of cabinet-work and general fitting. We have always felt that the inability of the average woodcarver to make up his own work

classes of woodcarving it is right that panels and similar subjects should be carved by way of exercise; but when, later, carving is taken up as a handicraft, it is idle to produce work which does not form part of some greater whole.

In this month's Supplement we give the design

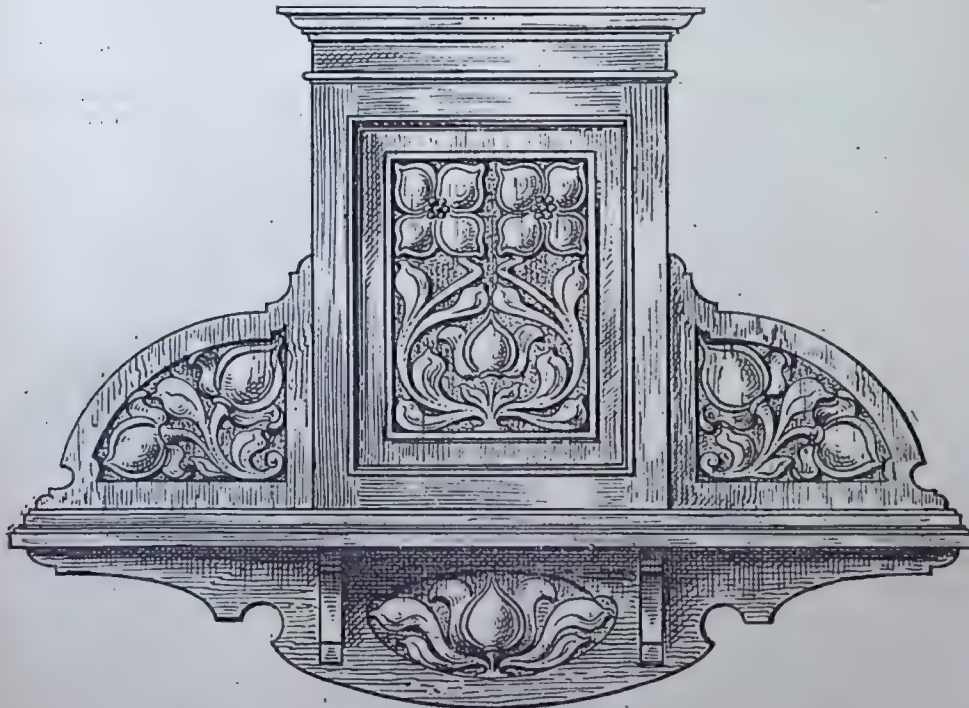


FIG. 1.—CARVED HALL SHELF. Size 27 ins. long by 20½ ins. high.



FIG. 2.—SIDE VIEW.

and to adapt his carving to woodwork generally is a misfortune. Woodcarving is ornament, not an ornament, and unless carved ornament decorates something it is of little real use except as an indication of what the worker himself is capable of doing with his carving tools. At schools and

for an effective, but not difficult, carved panel. It may be used in many ways. As shown, however, the panel forms the central feature of a useful bracket which may be used for the hall or sitting room. The shelf is 27 ins. long, and of good width, and in addition to the principal panel

there are three subsidiary ornamental parts, each of which may be adapted for use in some other way.

The general article consists of a framed panel, with frieze and cornice above. The frame rests

and precautions against warping must be taken when fitting the work together.

The panel, if loose, is fitted like a picture or mirror, a small bead at the back holding it in position.

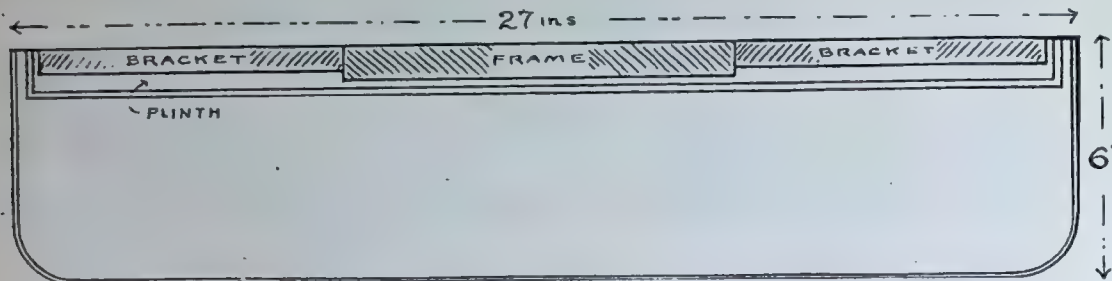


FIG. 3.—PLAN OF SHELF, SHOWING POSITION OF FRAME, BRACKETS AND PLINTH.

on a plinth, and at each side is a carved bracket. The shelf below is supported by two plain brackets, which spring from a shaped and carved apron piece.

Leaving for a moment the question of carving, the constructive work may be described. The over all size of centre panel will be $10\frac{1}{2}$ ins. by 8 ins. This allows ample margin for framing, the sight size of frame being 10 ins. by $7\frac{1}{2}$ ins. A thickness of $\frac{1}{2}$ in., or preferably $\frac{3}{8}$ in., should be taken for the panel in order to permit of fairly bold relief.

The frame itself may be put together as a picture frame, the size being $12\frac{1}{2}$ ins. by 10 ins. over the moulding. A mould $1\frac{1}{4}$ ins. wide by $\frac{7}{8}$ in. thick will do for the purpose, a bead on the inner edge being more suitable than a raised moulding. Should this plan be adopted it may be suggested that the top rail be about $\frac{1}{4}$ in. wider than the others in order to allow for the slight overlap of the frieze moulding. This is a detail which is not worth troubling about, however, if ordinary picture frame moulding of uniform width is used.

The frieze mould is 5-16 in., the frieze itself showing 1 in. in width. The cornice is also 1 in., with 1 in. projection. If the carved panel is framed as a picture, a frieze piece to finish 10 ins. by $2\frac{1}{2}$ ins. by $\frac{7}{8}$ in. thick will be required, this to be dowelled securely to the top of frame. The narrow frieze moulding is mitred and fixed on as a necking, and covers the joint. The cornice is also planted on, being glued and screwed from behind. The cornice will, of course, be returned at the ends in the solid, and this part of the work must be done neatly.

An alternative plan is to have the top rail of frame and the frieze all in one piece. In this case it may be the full $3\frac{1}{2}$ ins. in width, with the frieze mould and cornice planted on as already suggested; or it may be only $2\frac{1}{2}$ ins. wide, with a solid cornice screwed on above. A third plan—which some carvers may prefer—is to have panel and frame all of one piece, say, $\frac{3}{4}$ in. thick, the cornice and frieze mould being added afterwards. In this case a board 10 ins. wide will be required,

The frame is separated from the shelf by a $\frac{1}{2}$ in. plinth, which adds considerably to the appearance. This plinth is $26\frac{3}{4}$ ins. long and $1\frac{1}{4}$ in. or $1\frac{1}{2}$ in. wide, and is screwed (from below) to the frame. The plinth could, if desired, be a dummy one; that is to say, the bottom rail of frame, and the two side brackets could each be $\frac{1}{2}$ in. longer, and a narrow moulding planted on. In this case, however, returns at the middle would be required, as the brackets stand in about $\frac{1}{4}$ in. from the face of frame. Returns at the ends would also have to be made in the solid.

The carved brackets at the sides of frame are 8 ins. long, and $7\frac{1}{2}$ ins. high. The grain should be

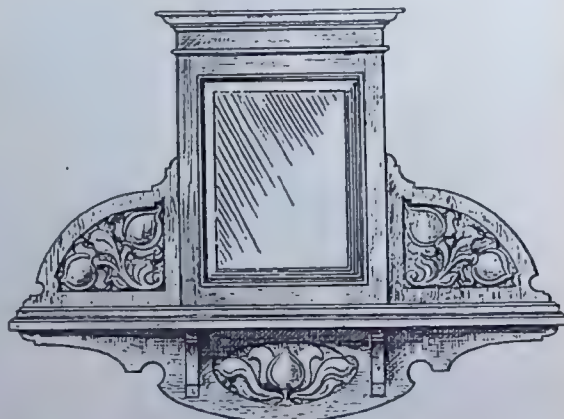


FIG. 4.—THE SHELF WITH BEVELLED MIRROR INSTEAD OF CARVED PANEL.

upright. These may be of $\frac{1}{2}$ in. wood and should stand back from $\frac{1}{8}$ in. to $\frac{1}{4}$ in. in from face of frame. Care must be taken to have the two straight edges absolutely square and true. The brackets are dowelled to the frame and screwed to the plinth from below.

The shelf, which should finish $\frac{1}{2}$ in. thick, is 27 ins. long and 6 ins. wide. At the back it should be rebated $\frac{1}{4}$ in. by $\frac{1}{4}$ in. to receive the apron piece. The top edge of shelf should have a simple mould—

say, the bead as indicated. If preferred, however, it may merely be rounded or chamfered. A hollow lip edge should not be given, as this feature appears on the plinth and the repetition is not desirable. It is a good plan to slightly round the front corners of the shelf (a radius of $1\frac{1}{2}$ ins. will do), sharp edges on furniture never being desirable.

The apron piece is $25\frac{1}{2}$ ins. long, $4\frac{1}{2}$ ins. wide and $\frac{5}{8}$ in. thick. It shows only $4\frac{1}{2}$ ins. in width, the upper $\frac{1}{4}$ in. being rebated for fixing to the shelf. The whole piece could, without disadvantage, be $\frac{1}{4}$ in. or $\frac{1}{2}$ in. deeper, the extra width being added at the top. The apron is glued in position and screwed to shelf, the screws being driven in slightly aslant for a hold. Additional security is afforded by means of the brackets below.

These lower brackets are small shaped pieces, 5 ins. by $3\frac{1}{2}$ ins., and $\frac{1}{4}$ in. thick. They are dowelled to underside of shelf and screwed to the apron piece from behind. This method of fixing should make the whole article rigid.

The carved work is fairly bold, but some parts—especially the leaves—give opportunities for

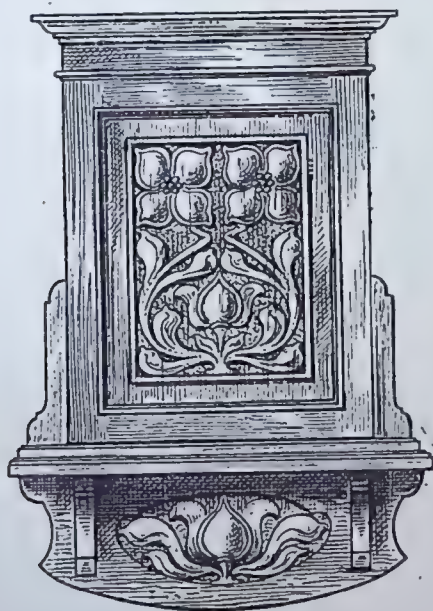


FIG. 5.—THE FRAMED CENTRE PANEL, WITH NARROWER SHELF.

spirited modelling. The floral features should not be made too heavy. If wood of $\frac{1}{4}$ in. thickness is used for the centre panel the background may be cut down $\frac{3}{8}$ in. in all, but care should be taken to keep only the highest points of the flowers and leaves to the full relief. The section given in the Supplement will aid the worker.

The carving on the brackets and the apron piece may be a trifle flatter. If it is desired to keep the relief of the brackets as high as that of the panels it will be necessary to cut down the flat border portion in order to avoid too deep a

dip at the edge. Should this be done it must be seen that the bracket is not set back too far from the face of frame; otherwise the flat top of plinth below the bracket will appear too wide.

The whole article may be simplified by substituting a bevelled mirror for the central panel and

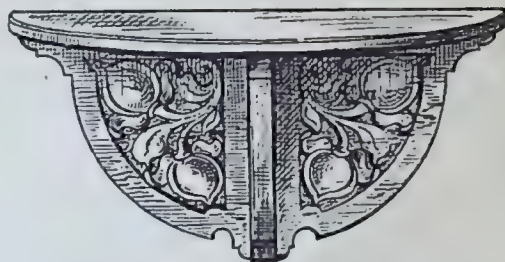


FIG. 6.—ADAPTATION OF SIDE BRACKET DESIGN TO MAKE A USEFUL LAMP BRACKET.

keeping the carved work or brackets and apron in somewhat lower relief. The effect of this is shown at Fig. 4. This alteration would be appropriate if the shelf were wanted for hall or lavatory. Or again, if it were desired to retain the main panel, the shelf could be reduced to a length of, say, 14 ins., and, by omitting the carved side brackets and shortening the apron piece, the article could be finished as the suggestion at Fig. 5.

A capital use for the design of the side brackets could be made as indicated at Fig. 6. The shelf (all but a full semi-circle) could be 16 ins. long, $7\frac{1}{2}$ ins. across, and $\frac{3}{4}$ in. thick, with simple moulded edge. The back, $15\frac{1}{2}$ ins. by 8 ins., is merely double the design as shown, an extra $\frac{5}{8}$ in. or $\frac{1}{4}$ in. in width being added in the centre to allow for the thickness of the support. For this support the diagram on the Supplement will be taken as it stands, but as carving will have to be on both sides the thickness must be $\frac{3}{4}$ in. For the back $\frac{5}{8}$ in. wood will do. The shelf and back may be rebated. The support may be dovetail-grooved to the shelf, or merely dowelled and screwed to the back from behind.

For the design as shown at Fig. 1, oak or dark walnut is the most suitable wood. If the carver is accustomed to oak and can make sure of getting a dull sombre finish, he should use this wood for preference. Otherwise walnut (finished dull) may be chosen, or, if a lighter wood is wanted, well-seasoned satin walnut may be tried.

THE WOODWORKER AND ART CRAFTSMAN
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To Make Tracing Paper.

Take two ounces of Canada balsam. Put it into a jar with half a pint of spirits of turpentine and mix thoroughly by a slow heat. When the mixture is dissolved paint it on a good tissue paper with a soft brush. The paper dries quickly and cleanly.

Wheels and Wheel Making.

2.—How to Make a Cart Wheel.

WE now come to a more advanced stage in the making of wheels, and the subject chosen for this chapter is what is at the present time the heaviest wheel in common use, being that found on farm carts, drays, etc. It is what would in technical language be called a four-and-a-half inch cart wheel—that is, the felloes (forming the outer rim of the wheel) are at $4\frac{1}{2}$ ins. distance across the width.

2. This latter illustration shows the construction. The spokes are tenoned at each end, the one end fitting into the hub, the other into the felloes. The first are not fixed in any way, but are held by friction only; the latter are wedged to hold the felloes in place.

In some few cases the wheels are made perfectly upright, the spokes on each side of the hub being straight, one with the other, as in Fig. 3. This is undoubtedly the easier way to make the wheel; but it is usually considered that, when made in this way, the running is not so easy on account of the friction being greater. This being so, it is usual

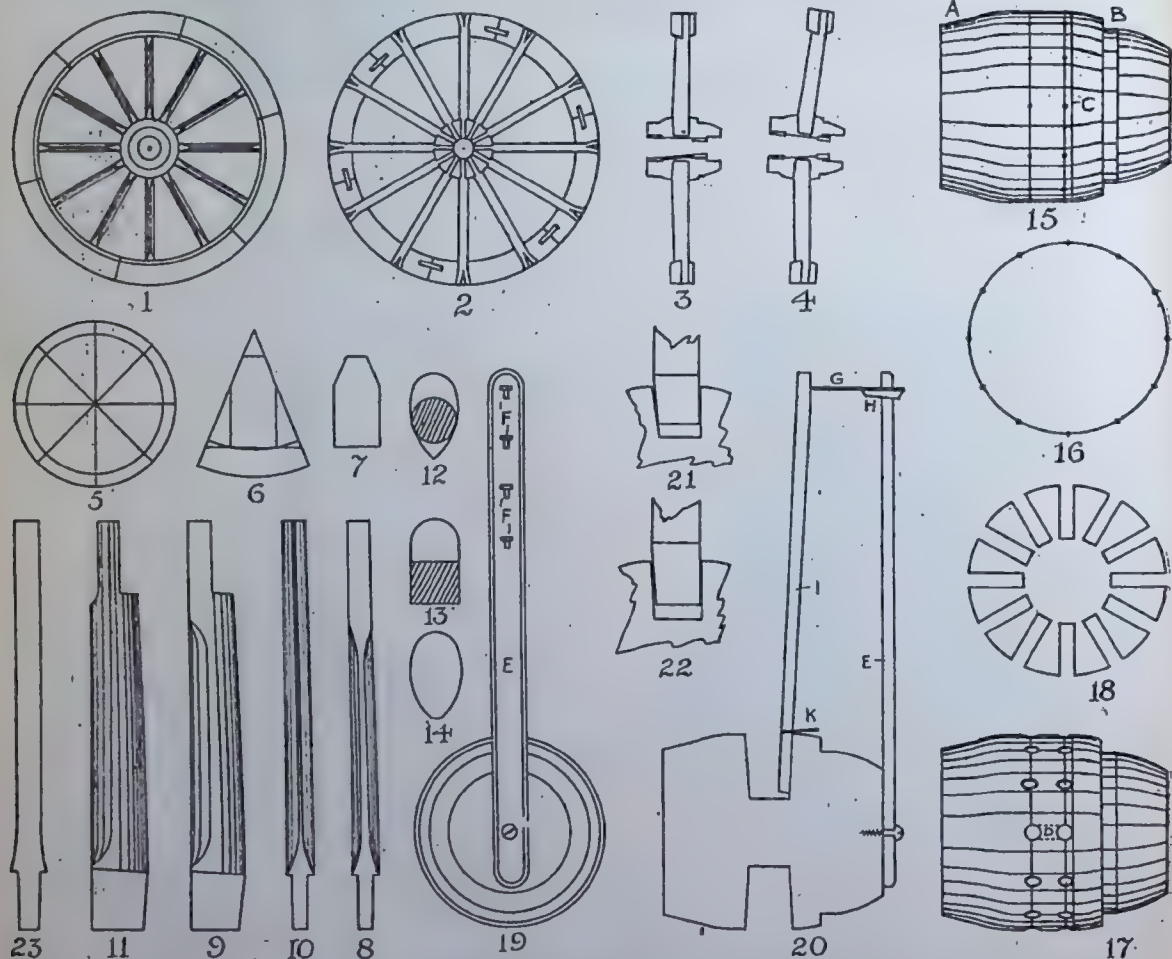



Fig. 1, Cart Wheel. Fig. 2, Section. Fig. 3, Wheel upright in Section. Fig. 4, Wheel "dished" in Section. Fig. 5, Section of Tree for cleaving. Fig. 6, Section of Cleft Spoke. Fig. 7, Section of roughly shaped Spoke. Fig. 8, Front of Spoke shaped for Square Tenon. Fig. 9, Side view of Fig. 8. Fig. 10, Front of Spoke shaped for Round Tenon. Fig. 11, Side of Fig. 10. Fig. 12, Section of Figs. 10 and 11. Fig. 13, Section of Figs. 8 and 9 at Ends. Fig. 14, Section of Figs. 8 and 9 at Middle. Fig. 15, Hub set out for Boring. Fig. 16, Hub spaced. Fig. 17, Hub bored. Fig. 18, Correctly bored Holes in Section. Fig. 19, End of Hub with strip pivoted. Fig. 20, Testing Mortises. Fig. 21, Mortise too small. Fig. 22, Mortise too large. Fig. 23, Spoke for fancy wheels.

These wheels consist of the hub, or nave, twelve or fourteen spokes, and six or seven felloes, and in front elevation appear more or less as Fig. 1. The section through the wheel, flatways, is as Fig.

to make the wheels more or less "dished," as in section Fig. 4. The axle on which they run is so made that the lower spoke is always upright, as shown in the drawing. This is termed "running

on the upright spoke," and if the wheels do not do this, the dished wheel will run heavier than the upright one, and will not be so strong. 

The hub for a wheel of this description should be from 12 ins. to 14 ins. in diameter, by from fourteen to sixteen inches long. It should be of elm, this being by far the toughest wood available, and must be thoroughly dry and seasoned. The spokes must be of English oak, this being the best wood for the purpose, though hickory is often used, especially for lighter work, and is certainly better than the foreign oak sometimes used.

Spokes should always be cleft out from the tree, not sawn. By the former method the grain will be left intact.

The correct way to cleave out the spokes is shown in Fig. 5. The timber should be cut off to the right length (30 ins. for a 5 ft. wheel, and for other heights in proportion), and with wedges split down through the middle, each piece cleft in the middle again and again, making eight pieces in all as shown. The sections will be as Fig. 6. From these the outer sapwood, also the superfluous wood at the sides and at the sharp edge from the centre of the tree, must be chopped away, leaving them in section as Fig. 7. They are then ready for facing up—that is, assuming that they are properly seasoned.

To face up, plane one of the sides straight and true; then the thick edge must be planed square to the other, finally planing the other side and back edge, making the spoke taper about a quarter of an inch in thickness and half an inch in width. The latter is usually done by guess-work; in fact, there is not in wheel-making the extreme truth required as in other woodwork, each piece being fitted into its proper place and required to fit only to that place.

After facing up, the spokes must be tenoned at one end (the wide end) to fit into the hub, and the tenons should be slightly tapered flatways as Fig. 8, and tapered at the back only, as Fig. 9.

The tenons to fit into the felloes must not be cut till the spokes are driven into the hub; but it must be decided if they are to be square or round, as if square the spokes must be shaped as Figs. 8 and 9, but if round then they will be as Figs. 10 and 11. The section of the former is as Fig. 12; that of the latter as Figs. 13 and 14, which show the ends and middle respectively. The shaded parts in each case are the tenons.

We can now take it that the spokes are prepared and tenoned at the large end only. Therefore, we may transfer our attention to the hub, which requires mortising to take the spokes. In passing, we may say that this is the most important part of the whole wheel. If the hub is not mortised as it should be, the wheel will not stand heavy wear and tear.

Fig. 15 represents the hub as it leaves the lathe. In practice it should be shod with two iron hoops before the wheel is put together, one on the back at A, the other on the flat near the front at B. The ring C is the line for the front of the spokes,

the other two lines being guides for the point of the boring bit in the first stage of mortising. On these latter lines the position of the spokes must be set out with the compasses, dividing the circumference into twelve equal spaces, as shown by the dots in Figs. 15 and 16. Holes must be bored to suit the size of the tenons on the spokes as in Fig. 17. These holes must be made to radiate towards the centre of the hub as nearly as possible, so that if the latter were cut across through the holes it should appear as Fig. 18.

When all the holes are bored in the hub the wood should be cleared out between each pair, as dotted lines at D, Fig. 17, and then the exact work begins. As may be imagined, the front end of the mortise must be at exactly the right angle for the front of the spoke, so as to give the required amount of rake to cause the dish of the wheel. The method of insuring the necessary accuracy is shown in Figs. 19 and 20. The slip E in the former drawing is pivoted to the centre of the hub by a single screw as shown, so that it is free to swing round as required. The mortises at F are to take the thin tongue G, Fig. 20 (whalebone is very suitable for this), which can be fixed so as to project at the required distance by the wedge H.

The strip I is long enough to fit into the mortise as shown, the distance being regulated by the peg K; it should reach to the extreme end of the spokes. To use these appliances, the amount of dish required should be determined, and the tongue G fixed to suit in the slot which comes nearest to the end of the spokes. The head of the mortise can then be tested at intervals, so that it is eventually cut away right to allow the strip I to just touch the tongue as in Fig. 20; by doing this with each one all will come alike.

The two sides and the other end of the mortises must be so made that the spokes will fit each in its proper position, numbering each as it is fitted. They should be made so that they enter the mortises to within an inch of the shoulder; with a slight tap of the mallet they will then drive in tightly.

Figs. 21 and 22 show two faults in mortising, either of which will tend to throw the spokes out of truth, even though the head is made correctly. The first fits too tightly at the bottom and in driving in will compress the ends of the tenons too much, thus throwing the outer end of the spoke back and reducing the dish. The latter fits too loosely at the bottom, and will allow the outer ends to vary on being subjected to pressure either way. Of the two faults the latter is the worse, but both should be avoided.

To be able to mortise a hub comfortably and to the best advantage, appliances are required to hold it in position and these we will show in the next article.

Fig. 23 shows a spoke thinned down near the hub, thus giving it a lighter appearance. It is not required in the wheel we are now making, but we shall refer to it later on.

(To be continued)

A Dwarf Display Dresser.

A Novelty in Furnishing.

THE room that does not press into its particular scheme of furnishing a fair proportion of the knick-knacks of daily life, such as the oddments of brassware or the little bits of china, pottery and bric-a-brac that bring up vivid memories of grandmother's days, always appears cold to the visitor when entering, because it lacks the personal touch. For this reason it is wise to include in the best room some special provision for the display of such treasured specimens as one may possess, and the suggestion given here for a "Dwarf Display Dresser" should prove serviceable for the purpose. There is little that is difficult in the construction of the dresser, and as it combines opportunities for the introduction of a few lengths of fretwork, with a chance for the possessor of a lathe to put in a bit of his best, we shall hope to hear in due course from many of our readers that the present article has been of practical use to them.

Fig. 1 gives a perspective view of the dresser; Fig. 2 a dimensioned elevation; Fig. 3 the parts forming the upper portion, with a suggestion for putting together; Fig. 4 the parts showing construction of the lower portion; and Fig. 5 a few additional details to a larger scale by way of alternative treatment. The wood proposed to be used is oak, to be selected free from shakes and hollows and specially well seasoned, as the stuff generally will be as thin as possible. The best effect will be obtained by staining to a rich Vandyke brown, for which purpose several coats of weaker stain will be better than one of deeper tint, to be finished with a rub of oil or the polishing rubber at choice. Or the whole thing may be fumed and dull finished.

From the dimensions marked on Fig. 2 it will be seen that the total height is put at 4 ft. 9 ins., the width of carcass being 3 ft. by 12½ ins. deep, back to front, and of the table top 3 ft. 3 ins. by 14 ins., thus allowing the latter to set over the carcass at front and sides by 1½ in. or so. The height may, however, be suitably increased to 5 ft., by adding another 3 ins. to the upper part, should this be desired for any special purpose; but in any case it is thought advisable to limit the cornice to the average eye level so that the dwarf character of the dresser may be retained. Two moulded fronts are shown to the drawers, and these should be fitted with a set of handles of the antique drop pattern, obtainable through the local furnishing ironmonger, or, to save delay, the worker may write to a firm such as Messrs. Oakden's, London Fields, London, N.E.

Coming now to detail, in getting out the cornice about 4 ft. 6 ins. of mould will be required to allow for a possible miscut in the mitreing. If unable to work the mould one's self, lengths of suitable section can be obtained from wood merchants such as Messrs. Borst Bros., 370, Old Street, London, E.C. It is machined out of 1 in.

stuff, and can be blocked behind up to 2 ins. thick or so with a small rebate cut for the dust-board to lie in, as indicated (A) after the mitred corners have been fixed. The section (A¹) can also be obtained to fix in the same way. The cornice (A²) can alternatively be worked out of three-quarter stuff (about ¾ in. projection), with a frieze and bead below it. The top in this case will be solid, having the uprights dovetailgrooved into it (stopped back ½ in. from front so that the joint does not show), and the bead glued along the rail (E), an extra 1 in. being allowed in the width of this for the frieze (a). The dustboard forms a false top, the side uprights being firmly held by the top (B), 3 ft. by 4½ ins. by ¾ in., dovetailed into them. The uprights (C), 2 ft. 6 ins. or 2 ft. 9 ins. by 4½ ins. by ¾ ins., in addition to



FIG. 1.—DISPLAY DRESSER.

being slotted for the dovetailed top to enter, will also be grooved for shelves and tenoned (C¹) to enter table top, or the ends here may be carefully dowelled to the table top. The shelves (D) can be cut from two pieces 3 ft. by 4½ ins. by ¾ in. or ½ in. thick. The ¾ in. thickness will be preferable if the shelves are finished with a plain edge, as shown, to be shallow grooved into uprights and stiffened against strain by supporting slips (D¹) out of 1 in. stuff with the outer corner rounded off for finish. These slips can be glued to the uprights in position if they are cut with the grain, to agree with the parts to which they are attached, otherwise they should be carefully screwed on. The finished effect of the shelves will, however, be improved if the front edges are fitted with lengths of ½ in. by ¼ in. astragal mould (G), the

upper projecting edges of which will be sufficient to form a stop.

The top fretted shaping or apron piece (E) can be cut from a piece 3 ft. by 2½ ins. by ¼ in., but will show 1½ ins. wide when fitted, the remaining ¾ in. being allowed for the fixing of the cornice mould. It can be glued into position with a glued block or two behind, and may be fitted the whole width of the uprights; or, as indicated (Fig. 3), may be halved into or butted against the vertical frets. The vertical frets (F) are allowed 2½ ins. to 3 ins. wide to finish ¼ in. thick. They

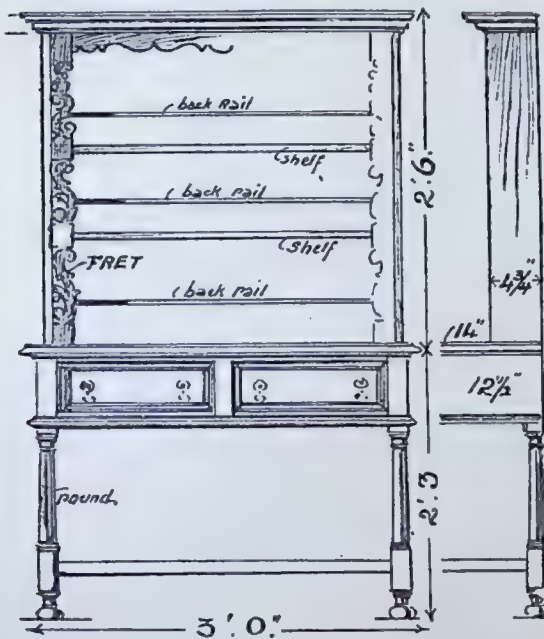


FIG. 2.—DIMENSIONED FRONT AND SIDE ELEVATIONS.

can be cut with straight outer edges to fit over the front edges of the dresser uprights, or the edges of the latter may be rounded and the fret be cut as shaded in three repeats. It will be halved to the shaped piece (E) and pinned, and also be cut into the two shelves and pinned in addition to being glued to the inner side of uprights. Lengths of narrow lath or beading (H), say, ½ inch wide by ¼ in. thick, can be let into the back edges of uprights and pinned as a rest for plates that require to lean, and a groove is also useful in the shelves wide enough for the edges of the plate or plaque to enter. On the top, however, a length of bead will look better glued an inch or two behind the side frets for the edges of a tray or plate to rest against.

Coming to the lower part, the top, 3 ft. 3 ins. by 14 ins. by ½ in. or ¾ in. should be neatly jointed and smoothed, and as shown in Fig. 1 is finished with a four-member mould for the ½ in. thickness. If ¾ in. stuff net is used it can be moulded as at I, Fig. 3, or the edge may be simply rounded

away. The legs (J) will require four pieces 2 ft. 3 ins. by 1½ ins. by 1½ ins., the upper 7 ins. or so remaining square. The turning below this may be allotted a length of 12 ins., with a square of 3 ins. and the remainder for the turned feet. The turned members will require careful cutting, the lesser finishing 1-16th in. thick, and others ¼ in. to ½ in. Diameters can be from ¾ in. to 1 ¾ in. full at the widest swell. Upper end will be slotted for dovetailed rail to enter, mortised for sides and bearer rail, and lower square mortised for the rails (T and S) to enter. Two rails (K), 3 ft. by 2½ ins. by ¾ in., will be dovetailed into legs and sides as indicated in plan, and the front rail should also be mortised for partition (M). The bearer rail (L), 2 ft. 10 ins. by 2½ ins. by ¾ in., is tenoned each end to enter mortises in legs, and also mortised for partition to enter as at (K). The partition itself will take a piece 6 ins. by 2½ ins. by ¾ in.,

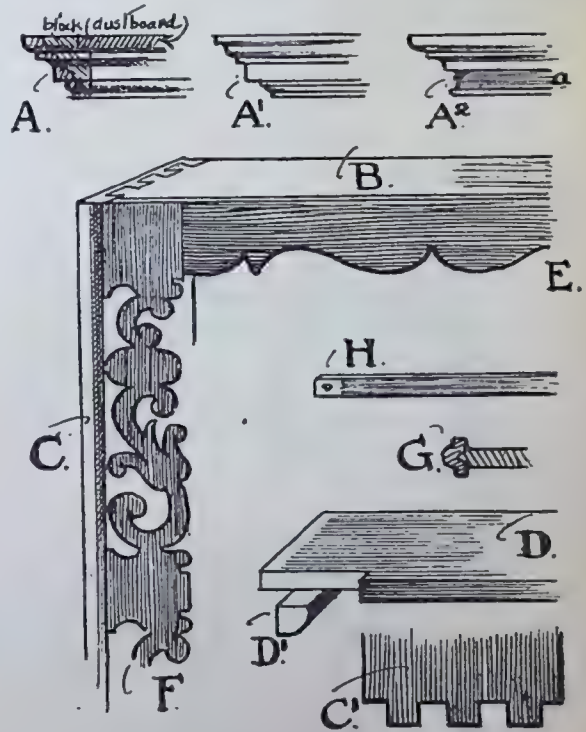


FIG. 3.—PARTS OF UPPER PORTION.

with double tenons each end, and will also be grooved for a continuation piece (N) to enter and so extend it to the back which will be screwed through to it. For the two sides (O) two pieces 12 ins. by 7½ ins. by ½ in. can be allowed, tenoned each end to enter corresponding mortises in legs, the upper edge being also slotted for dovetails.

The two runners (P), 12 ins. by 1½ ins. by ¾ in., can be glued up to under edge of sides and enter bearer (L) with a stub tenon as indicated. A similar rail (P'), 2½ ins. wide, is fitted under continuation piece (N), and both runners and bearer

rail have the inner edges grooved to receive dustboards of $\frac{1}{2}$ in. thickness, to be pushed home from the back. The two drawer guides (R), which butt between the inner sides of legs, can be of 1 in. stuff, and such inner parts as these can be of sound pine, other parts such as L, K and P being only faced with oak should it be desired to economise the hardwood. The lower rails (S and T) are tenoned each end into legs. The former come out of pieces 3 ft. by $1\frac{1}{2}$ ins. by $\frac{7}{8}$ in., and the latter will take pieces 12 ins. long, the top edges being rounded off or finished with a neat quirk.

There remains the drawers, for the fronts of which two pieces $16\frac{1}{2}$ ins. by $4\frac{1}{2}$ ins. by $\frac{1}{2}$ in. can be allowed, this allowing a trifle in length for fitting. If the fronts are moulded, about 5 ft. will be required, $\frac{5}{8}$ in. wide by $\frac{1}{2}$ in. thick, neatly mitred and glued and pinned in position. The four sides can be 10 ins. by $4\frac{1}{2}$ ins. by $\frac{1}{2}$ in., with two backs $16\frac{1}{2}$ ins. by $4\frac{1}{2}$ ins. by $\frac{1}{2}$ in., the bottoms being grooved in of $\frac{1}{2}$ in. thickness. The drawers should be of oak throughout.

In Fig. 5 alternative detail for columns is given, which will make the column dimensions above

it be preferred to dispense with the side frets the uprights (C) might be pleasingly finished by shaping in the manner indicated at W, spaced

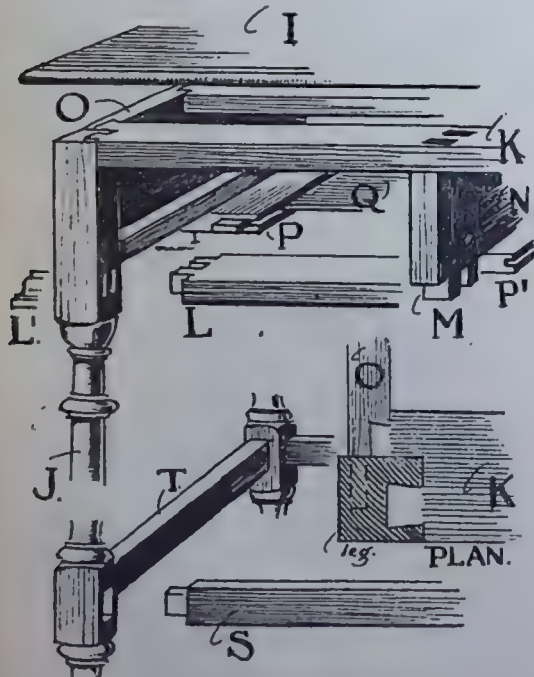


FIG. 4.—CONSTRUCTION OF LOWER PART.

clear for setting out. The small bevelled tablets or panels on the legs in Fig. 1 are shown with alternatives (U, U¹ and U²), the spindles if preferred being turned from pieces of 1 in. by $\frac{1}{2}$ in. stuff, glued together with paper between so that they can be easily split after and the flat side be glued to the leg in line with the drawers. An alternative repeat fret is given at V, which would go best with leg J¹, and cornice mould A. Should

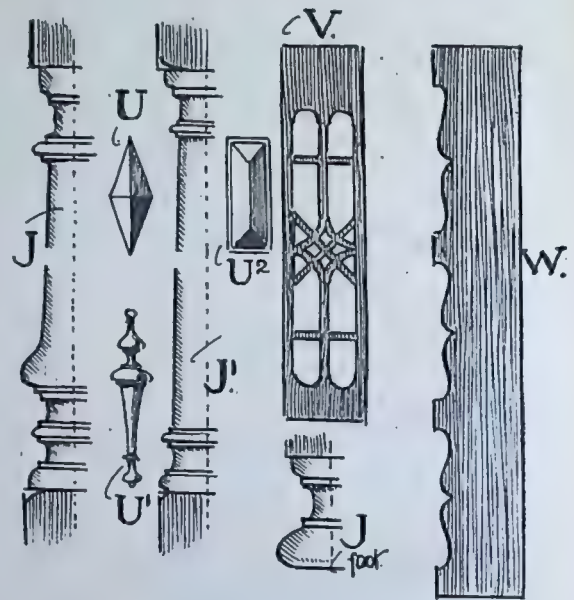


FIG. 5.—DETAILS AND ALTERNATIVES.

equally and with the edges smoothed to an oval rather than a round section.

WOOD LIST.

A	Cornice mould	4'	6"	x	2"	x	1"
B	Dustboard top	3'	0"	x	3"	x	1"
C	1 Top	3'	0"	x	4"	x	1"
D	2 Uprights	3'	0"	x	4"	x	1"
E	2 Shelves	3'	0"	x	4"	x	1"
F	1 Top Fret	3'	0"	x	2"	x	1"
G	2 Side Frets	3'	0"	x	2"	x	1"
H	Beading to front of shelves	6'	0"	x	1"	x	1"
I	Plate rest at back	6'	0"	x	1"	x	1"
J	Ditto on table top	3'	0"	x	1"	x	1"
K	Table top	3'	3"	x	14"	x	1"
L	4 legs	3'	3"	x	14"	x	1"
M	2 top rails	3'	3"	x	21"	x	1"
N	1 bearer rail	3'	3"	x	21"	x	1"
O	Mould	5'	6"	x	3"	x	1"
P	1 partition	10'	6"	x	21"	x	1"
Q	1 continuation piece	10'	6"	x	6"	x	1"
R	2 Sides	12'	x	7"	x	x	1"
S	2 Runners	12'	x	12"	x	x	1"
T	1 Centre runner under partition	12'	x	21"	x	x	1"
U	Dustboards	16'	x	10"	x	x	1"
V	2 Guides	12'	x	1"	x	x	1"
W	1 Back	16'	x	7"	x	x	1"
X	1 Front lower rail	16'	x	1"	x	x	1"
Y	1 Back ditto	16'	x	1"	x	x	1"
Z	2 Side ditto	12'	x	1"	x	x	1"
AA	Drawer Fronts	16'	x	4"	x	x	1"
AB	Mould	5'	0"	x	1"	x	1"
AC	4 Sides	10'	x	4"	x	x	1"
AD	2 Backs	16'	x	4"	x	x	1"
AE	2 Bottoms	16'	x	11"	x	x	1"

Set of 4 drop handles. 2 lever locks and keys, if required.

The above detailed list will be serviceable for reference in getting out the parts, all lengths being full including joints for paring to a fit. All widths and thicknesses are net finished sizes.

Simple Forms of Wood Carving.

BY HERBERT TURNER.

Easy Gouge Work.

THE designs that may be created, based upon the work that can be done by one tool (or, at the most, three), are legion. We give seven here, and must leave these for readers to amplify, or to suggest others that are based upon the same type of tool cut. The designs are composed of short cuts, so arranged as, chiefly by repetition, to give definite designs which, although they are admittedly not of an ambitious nature, yet are simply effective, simply done, and which possess the great merit of being in accordance with the cut of the carving tool.

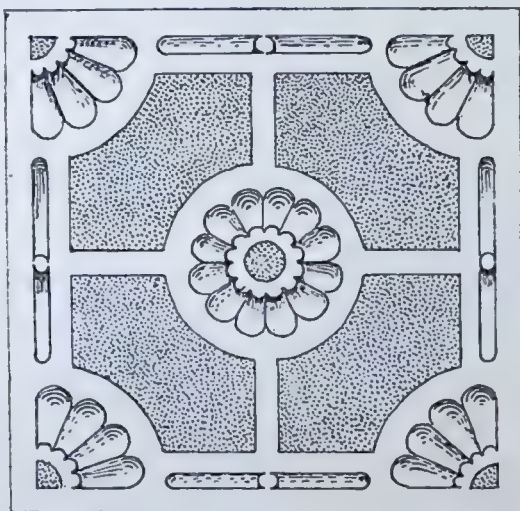


Fig 1

only in addition to the nail punch would do all the work.

Fig. 1 is suitable for a teapot, lamp stand, or similar article. It may be made in oak or American walnut with complete success. Satin walnut cuts easily, but is inclined to warp; lime wood and sycamore are useful woods to use.

If the punched ground is to be worked as shown, a veining tool should be run round the edges to emphasise the boundaries. The gouge cuts employed throughout the whole of the designs are short, and consist of setting the tool in (that is, using it in a vertical position, and pressing it in by hand, or with a mallet) and then, using the gouge horizontally and towards the vertical cut already made, a chip is taken out.

In the case of Fig. 1 the gouge cuts that together form the conventional flowers are shown close



Fig 2

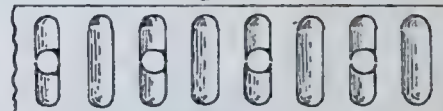


Fig 3

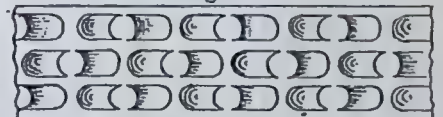


Fig 4

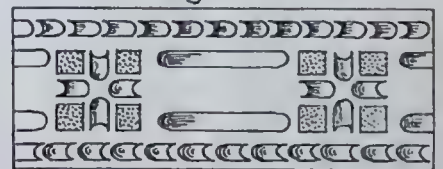


Fig 5



Fig 7

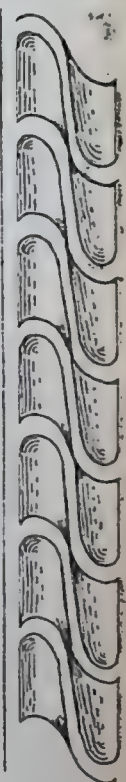


Fig 6

SUGGESTIONS FOR SIMPLE GOUGE WORK DESIGNS.

The tools required for the execution of these suggested designs are as follows:—

One carving tool, No. 7 $\times \frac{1}{8}$ in.

One carving tool, No. 8 $\times \frac{1}{4}$ in.

One carving tool, No. 5 $\times \frac{1}{4}$ in.

One carving tool, No. 7 $\times \frac{3}{8}$ in.

Also one punch, a single nail point being the best.

All the designs shown can be done with these tools; and with a little modification, which the worker can make for himself, one carving tool

together. With such an arrangement the edges of the cuts need careful cutting, or they tend to splinter. A better arrangement is seen in Fig. 7, where a space is left between. Even then the cuts cannot be made without much care.

Figs. 2, 3, 4 and 5 give designs that are very suitable for frames or borders, dado mouldings, rails of chairs or doors. They explain themselves fairly well. Figs. 2 and 3 are cut with the No. 8 by $\frac{1}{4}$ inch tool. They are both suitable for horizontal positions, rails and dado mouldings. Fig. 4 is

suitable for either horizontal or vertical positions, whilst Fig. 5 makes a useful frame pattern, possessing the advantage of being adaptable to the length of the frame. If the longer gouge cuts are lengthened judiciously, so as not to alter the balance of the design, Fig. 5 may be made to fit any frame. All the cuts may be lengthened, and by using gouges of greater width quite different results may be gained, and designs made from these simple elements to fit frames of almost any width.

Fig. 6 gives an illustration of how, by such a simple element as a single gouge cut, designs of some apparent intricacy can be made. In Fig. 7 a design is formed that can be used for many objects of varying character.

All these designs are offered only as suggestions as to what is possible with a few tools, with the smallest possible expenditure of physical effort, and with the smallest amount of litter and dust.

Victoria and Albert Museum.

Recent Acquisitions.

The following important acquisitions have recently been made in the Department of woodwork in the Victorian and Albert Museum. Three of these are additions to the collection of mediæval woodwork.

The earliest is a French casket of the 14th century, which is stated to come from the Church of the Holy Trinity at Eu, in Normandy. It is of oak, gilt, and elaborately carved with Gothic tracery, the mounts being of gilt copper, and the interior painted with the coronation of the virgin, and the symbols of the four evangelists. A pair of oak cupboard-doors from Northamptonshire, painted with scenes representing the orders of Angels, dating from about 1500, are exhibited in Room 7. Of about the same date is a standing livery cupboard carved with open Gothic tracery; the ostrich feathers which form part of the decoration probably represent the badge of Arthur, Prince of Wales, eldest son of Henry VII. This was found recently in a farmhouse at Burwarton, Shropshire. A fine piece of panelling, bearing the date 1546, has been purchased from a house in Essex. It is elaborately carved with decorations in the style of the Renaissance, among which are the royal arms as borne by Henry VIII., and those of Stephen Beckingham. The old Hall at Beckingham from which the panelling originally came was built by Richard Beckingham on an estate granted to him by Henry VIII. in 1543.

The Museum collection of painted wooden roundels, which were in use in Elizabethan and Jacobean times, has been enriched by a very uncommon set consisting of twelve pieces enclosed in a turned case, each painted in silver and gold on black, with figures wearing costumes of the period of James I. An important example of early English lacquer is a cabinet of the period of Charles II., mounted with brass and decorated with raised lacquer in gold and colours on a black ground. The carved stand is silvered—an unusual feature, gilt being more usually employed for such a purpose. In the same room is a Queen Anne writing cabinet, which is stated to have belonged to Dean Swift; it is veneered with walnut and decorated with fine marquetry-work, and is fitted with glazed doors above, and with a secretaire below. It is figured in Macquoid's "History of English Furniture."

Copper Repousse.

By K. COOKSON.

A Mirror or Photograph Frame.

HERE is a design for those who like carrying out pieces of work which pay for care and close attention to detail. The first thing to do is to enlarge the design to the required dimensions. If intended for a photograph, these will be governed of course by the proportions of the picture. A mirror about 12 ins. high would be a nice size for standing on a writing table or bureau, or for hanging on a wall.



FIG. 1.—DESIGN FOR PHOTOGRAPH OR MIRROR FRAME IN COPPER REPOUSSE.

Thin metal may be used for the frame as there is no strain on it; 4 or 5 B.M.G. will be quite thick enough, but those who prefer the soft, rich effect obtained by using a higher gauge may obtain 6 or 7 B.M.G. if a fairly large frame is to be made.

In cutting the metal to size, leave a margin of $\frac{1}{4}$ in. all round for mounting, a similar margin being allowed round the internal aperture. Proceed to clean the metal and transfer the design by means of carbon paper; this will come out more clearly if the copper has previously been rubbed over with a little turpentine. The work may be carried out either on pitch or on wood, but a pitch block of this size is rather unwieldy, and the earlier stages at all events can be carried out perfectly on a wooden ground. Fasten the metal

to a piece of deal, which must be perfectly free from knots, and show as little grain as possible. Trace round the design, making as firm and even a line as possible. The traces will have to be constantly varied to suit the different curves, the round dots calling for a small curved one; and the foliage a more open curve, while the larger parts will be more easily and quickly carried out with a medium-sized ordinary straight tracer. Before raising the design at all from the back, get the ground evenly planished down from the front. The *evenness* is the important point, and it is this which especially requires attention in carrying out this design.

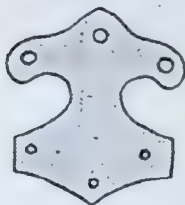


FIG. 2.—SCREW PLATE.



FIG. 4.—DIAGRAM SHOWING METHOD OF CUTTING MARGIN.

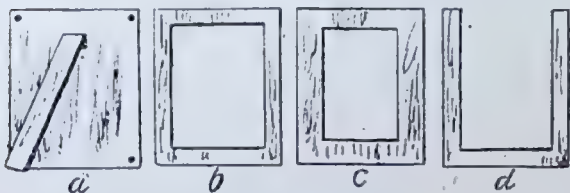


FIG. 3.—DETAILS OF BACK FRAMING.

The design being a repeated one (reversed in quarters) each part must correspond exactly with the three others or the effect will be lopsided. When the whole design has been defined by the working down of the ground, the metal should be reversed, and this time a thick piece of felt should be placed between it and the board. Proceed to do the heavy lines which form the edges of the design. If the copper gets hard before the raising is accomplished, it must be annealed. With a large piece of work like this, care must be taken to get it soft all over, or the discrepancy will be felt in the working, some parts responding more to the pressure of the tool than others.

It will be found easier if each detail is carried out wherever it occurs in the pattern at the same time instead of finishing one portion completely. Due regard must also be paid to the relative importance of the different members. The little rounds, though they must be firmly indicated, must not be made too prominent or they will have a disagreeably spotty effect.

This mirror will look very well if carried out in silver, in which case a smaller size may be selected, say about 9 ins. over all, the cost of the metals being about fifteen shillings.

The mounting of a mirror is very easy. The superfluous metal on the inner edge is simply

turned in, and pressed closely. Two pieces of thin wood backing are cut to the full size of the frame; in the centre of one a hole is cut rather larger than the aperture and at exactly the size of the looking glass. The metal is laid on a piece of soft felt, and the pieces of wood with the glass in place are laid on to it and the border of metal pressed firmly down. A copper plate as the sketch (Fig. 2) must be made and screwed on to hang it up by.

Photograph frames require different mounting as they generally stand on a table, and provision should be made for changing the photograph. Three pieces of thin wood are required: (a) A piece (which should be polished) fitted with a hinged strut; (b) a piece with a hole cut in it the size of photograph and glass; and (c) a piece the size of the frame. Firstly place c on the frame and turn in the superfluous metal round the apertures over it. Secondly, place b in position, and turn the copper up round the outer margin; this will leave a rebate for the glass and photograph. Lastly fix on the back with four or six round-headed screws.

An alternative is to cut the sides of b right up to the top, making a U-shaped piece, as Fig 3 d; the glass and photograph then slip in and out from the top. The writer has tried all three ways and much prefers the first given.

A dark oxydised finish is the best.

West African Olive Wood.

One of the best timber trees in West Africa is the azeitona. Here we call it olive, but it is not an olive at all. It is closely related to the West Indian bullet-tree, or ausubo, so much used for building. The tree also grows on the mainland, but it finds its best development on all the islands along tropical West Africa, and especially on the middle and higher elevations, and is found very rarely in the lowlands. We see it stated in *Woodcraft* that azeitona, in its mature state, it is a tree of considerable proportions; the largest trees are found in the southern part of the Island of St. Thomas, where individual specimens may be found measuring 120 feet in height and from 4 to 6 feet in diameter 4 feet above the ground. In the northern and central portions of the island the trees are smaller and on the average do not exceed 90 feet in height and from 2 to 3 feet in diameter.

Azeitona is an excellent wood. It is hard, very heavy, strong, tough, fine and exceedingly close-grained, and has a dark yellow colour with a reddish tinge, resembling somewhat that of the true olive wood. The wood is susceptible to a good polish. It is durable both in the air and under water, but in contact with the soil it decays very quickly. While it is difficult to work it is used considerably in carpentry work. The natural finished wood made into furniture has a beautiful appearance. It is employed also by the wheelwright and is used in making all kinds of farming implements and in shipbuilding. Moreover, the wood has been used successfully for piles, studding and for crossbeams in building houses.

It also yields excellent charcoal, but it is too valuable for other purposes to be converted into charcoal very extensively. The demand for local consumption is so great that very little of this wood goes to the European or American markets.

Panelling—II.

WE will now take into consideration panelling proper, in which the framing is real and the panels genuine and not merely a background throughout. The framing is, as its name implies, framed together with mortise and tenon joints, the panels fitting into grooves made for them in the various parts of the framing; if done properly they will fit so closely into the grooves that they will form as it were one solid whole.

panels only in height, while the other has four smaller ones. Simple as even this is, both in theory and practice, the probability is that the majority of carpenters or joiners would, in working it, fail to make all the joints fit—this for a reason which we will give later on.

It will be noticed that the horizontal pieces of the framing are continuous from stile to stile, and that it is the vertical parts which are cut to fit between. This is as it should be in most cases, though there are exceptions which must be treated on their merits. In all ordinary cases the worker should follow out the rule that stiles (outside

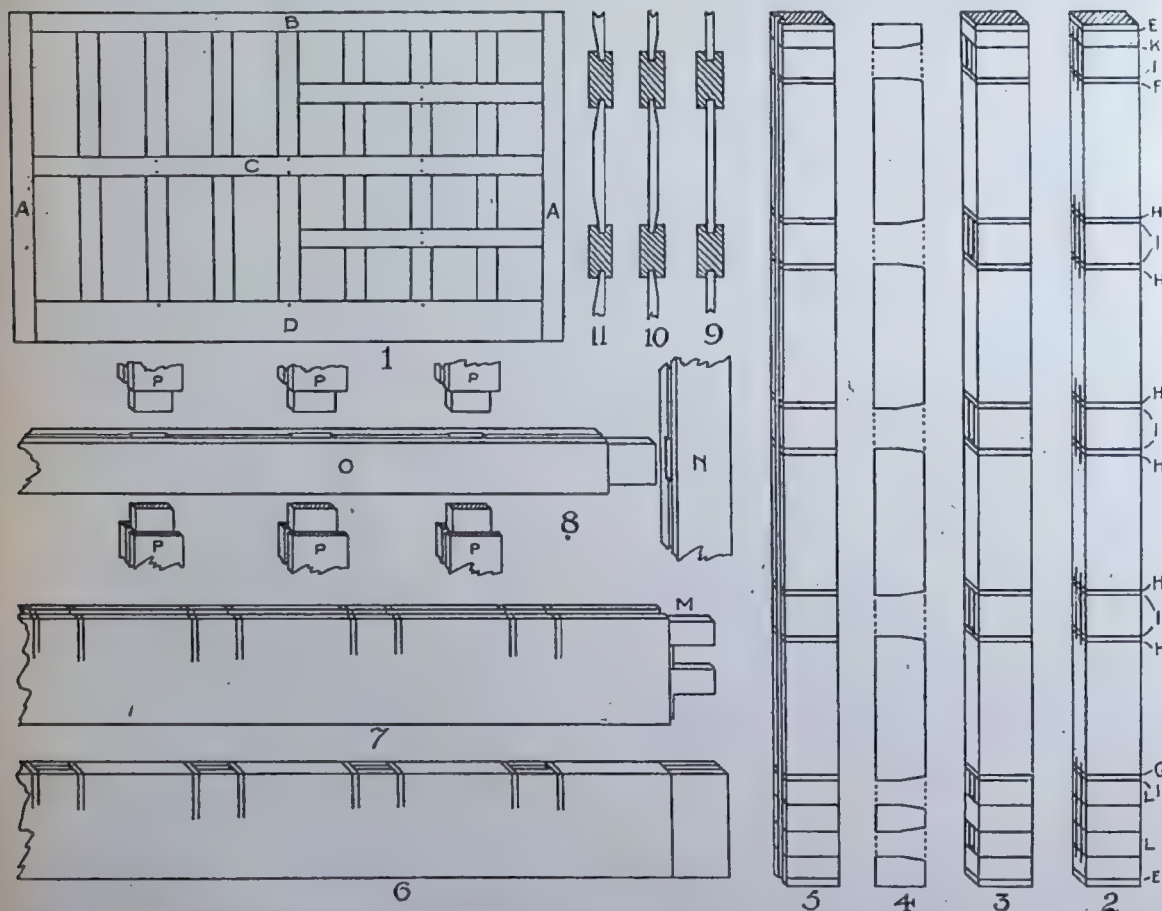


Fig. 1, Elevation of Panelling (two treatments shown). Fig. 2, Stile set out for mortising. Fig. 3, Stile mortised. Fig. 4, Section through Stile, showing "Wedging-in" mortises. Fig. 5, Stile grooved for Panels. Fig. 6, Bottom Rail set out and mortised. Fig. 7, Bottom Rail mortised, grooved, tenoned and haunched. Fig. 8, Portion of Panel ready for putting together. Fig. 9, Section of Plain Panel. Fig. 10, Section of Mulleted Panel. Fig. 11, Section of Simple form of Raised Panel.

The simplest form in which real panelling can be done is the rectangular frame, filled in with a single panel, such as we see in cupboard and wardrobe doors. This we will pass over as being almost too simple for our purpose, and consider something with more work in it and requiring more skill to set out and construct. This we find in the panelling shown in Fig. 1, and even this we have divided into two portions, the one having two

vertical pieces) should run from top to bottom, all rails (horizontal pieces) should be continuous from stile to stile, and the muntins (inside vertical pieces) should be cut between the rails.

This rule then necessitates that the stiles will require mortising to take not only the top and bottom rails, but the intermediate ones as well, no matter how many of these there are. The rails will need tenoning at the ends to fit into the stiles,

and mortising to take the muntin, the top and bottom on one edge only, the intermediate on both edges. This means in most cases that the mortises will be made quite through the rails. The muntins will be tenoned on both ends to fit into the rails, some of the tenons being long enough to be pinned, the others being shorter. Should pins not be allowed for fixing, the tenons may be secret wedged (to be explained later); in any case the tenons which come to the stiles should reach through the latter, and they can then be wedged up in the usual way on the outside.

In making panelling as in other work, the first and also the most important part is to prepare the wood. Therefore to make the panelling shown in Fig. 1 we shall require (if it is to be made throughout as shown on the left) two stiles, A, three rails, B, C and D (top, middle and bottom), and fourteen muntins. If to bear the right half of Fig. 1 we shall want two additional rails and fourteen additional muntins. The former will be the same as the rails B and C, but the latter will be only half the length of the first; thus the first fourteen may be cut in two and the correct number is at hand. In cutting off the necessary material, each stile should be allowed two inches longer than the finished length, and each rail and muntin half an inch longer. These extra lengths will allow for cleaning off when together, and in the former case will prevent splitting at the ends in wedging up.

In planing up, after each part is faced (that is, planed straight and out of twist and one edge squared accurately) all the inner pieces, to which other parts have to fit to both edges, must be gauged accurately to a certain width. The other edge may be squared at the same time, and then all the parts are ready for setting out. To do this, take the stiles and, laying them together face to face or back to back, mark on them the exact height the finished panelling has to be, as E E, Fig. 2. From this, at the one end, measure inwards the width of the top rail, as F, and from the other end measure the width of the bottom rail, as G. Between these two marks space out equally for the other three rails, as shown by the marks H. Now from these marks F, G and H set off inwards half an inch, giving the marks I, and these (as regards the three intermediate rails) will give the size of the mortises. At the top end set off from the mark I a distance equal to three-fifths of the width of the top rail, thus getting the mark K, which will be the mortise. At the bottom end divide the space from E to I into four equal spaces as shown, and the mortises will be those marked L. The whole of these marks must be squared over the two stiles, on both edges and across the face, and then by gauging with a double-tooth gauge, or with two single-tooth gauges, the mortises are set out as shown.

The rails and muntins will be set out in a similar manner, always remembering that the mortises must be reduced in width as shown to allow for the panel grooves; the tenons must be set out to the full width of the stuff.

In setting out for a quantity of panelling, all the

stiles and also all the rails would be done at once. In our next chapter we will illustrate the procedure, thus making clear what may be somewhat clouded at present.

Fig. 3 gives the stile with the mortises made. Fig. 4 shows the same stile sectionally, this being given so that the method of opening out the mortises at the back or outside edge for the insertion of wedges can be seen and understood.

After the mortising is done, the grooves to take the panels have to be made, and the stile (after this is done) is shown in Fig. 5. Here the groove is shown as being the same width as the mortises, as it should be, but as this is sometimes impossible the rule is that the groove should come to the face of the mortise, leaving it to come as it will at the back.

In Fig. 6 we have the bottom rail set out and mortised, but the tenon not yet cut. This latter should be sawn in before the panel groove is made, but the shoulders should not be cut until after this is done.

Fig. 7 shows the rail with the groove made, the shoulders cut, and the tenon cut away to fit the double mortises in the stiles. The purpose of reducing the width of the mortises can now be seen, the width of the tenons being reduced by the cutting of the groove as at M.

In Fig. 8 we have a portion of the stile N with one of the intermediate rails O ready for placing in it, the muntins P also being ready for fitting into the rail. It will be noticed in this sketch that the panel groove is not so wide as the mortise being made to suit panels only.

Figs. 9, 10 and 11 show sections of three kinds of panels, the first being parallel in thickness, so that it is faceable on both sides. The second (Fig. 10) is the ordinary mulletted panel bevelled off the back to fit the groove. The last (Fig. 11) is bevelled at the front, thus giving a rough effect of a raised panel. The method of preparing and fitting all these and others will be given later on when we have explained in detail the methods of setting out.

At the beginning of this chapter we promised to give the reason why so many workmen failed to make the joints fit in work such as we are now describing. The reason is this: If, in planing up the rails, some are wider than the others, and the setting out is done all alike, as it must be, it follows that if set out to suit the wider rails some of the muntins will come too short, whereas if set out to suit the narrower rails the same pieces will come too long, and difficulties will be met with in putting the work together. Therefore it is necessary to impress on readers who are interested in this work that the timber must be gauged up truly if the work is to be turned out in a satisfactory manner.

(To be continued.)

London County Council Technical Classes for Boys.

A detailed pamphlet giving particulars of the 1913 session (which begins on April 1st), may be had on application to the Organiser of Trade Schools for Boys, Education Offices, Victoria Embankment, W.C.



Smoker's Cabinet or Medicine Cupboard.

Plain, or with Carved Door Panels.

THREE feet in length over all, about 21 inches wide over the posts, with an enclosed cupboard giving an inside space of 18 ins. high, 19 ins. wide and 6½ ins. deep—this, roughly, is the Smoker's Cabinet (or Medicine Cupboard) we illustrate here. The work throughout is straightforward and comparatively plain, but it will be an improvement to have carved panels in the centre spaces of the doors, and for this purpose we give a full-sized design in Fig. 5.

Any wood may be used—oak, walnut, mahogany or satin-walnut; or whitewood may be used and afterwards stained.

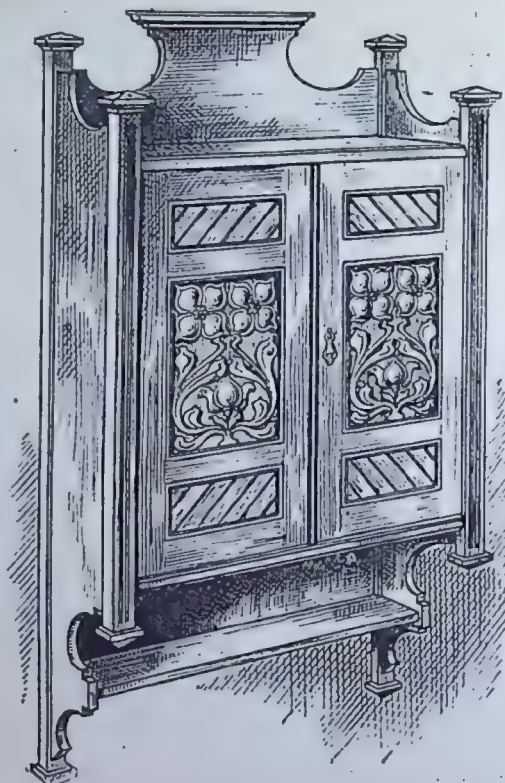
Figs. 1, 2, 3 and 4 (side and front elevations, section and sectional plan) are drawn to scale, but it may be convenient to give here the sizes for wood required. In most of the lengths and widths a slight allowance has been made for cutting, but all thicknesses given are net finished sizes.

	ft.	ins.	ins.	ins.
Back angle posts (2)	2	10	1½	1½
Front angle posts (2)	2	0	1½	1½
Top caps (4)	0	2½	2½	7½
Neck moulds under ditto, allow	2	6	3	3
Bottom caps (4)	0	2	2	2
Pediment	1	8	7	2
Pediment moulding	1	0	1½	1½
Ends, shaped (2)	2	8	7	2
Back	4	2	10	2
Top of cupboard	1	8	8	2
Bottom of cupboard	1	8	8	2
Wide inside shelf	1	7	7	1½
Narrow inside shelf	1	7	4	1½
Shelf (open) below cupboard	1	8	4	1½
Door rails (8)	0	9½	1½	1½
Door stiles, outer (2)	1	6½	1½	7
Door stiles, inner (2)	1	6½	1½	7
Large door panels (2), if carved	0	8½	6½	5
Large door panels (2), if not carved	8½	6½	3	3
Small door panels (4), from one piece	1	6	7	1 or 3
Astragal mould for door	1	8	1½	3
Back fillets (3)	2	0	1½	1
Fillets under inside shelves at ends	1	6	3	1

The above lengths and widths, it will be borne in mind, are cutting, not finished, sizes. Thicknesses are net.

The back posts (1½ in. square) work out at 2 ft. 9½ ins. in length, without the top and bottom

caps—or 2 ft. 11 ins. with caps. These caps are shown full size at Fig. 6, the neck mould of the upper cap being mitred and planted on around the post. The caps themselves will be doweled on. The plan of front post caps will be as Fig. 7, but the back caps will necessarily finish in plan as Fig. 8, with only three faces. See also side elevation, Fig. 1.



SMOKER'S CABINET OR MEDICINE CUPBOARD.
Size, 3 feet high by 1 ft. 9 ins. wide.

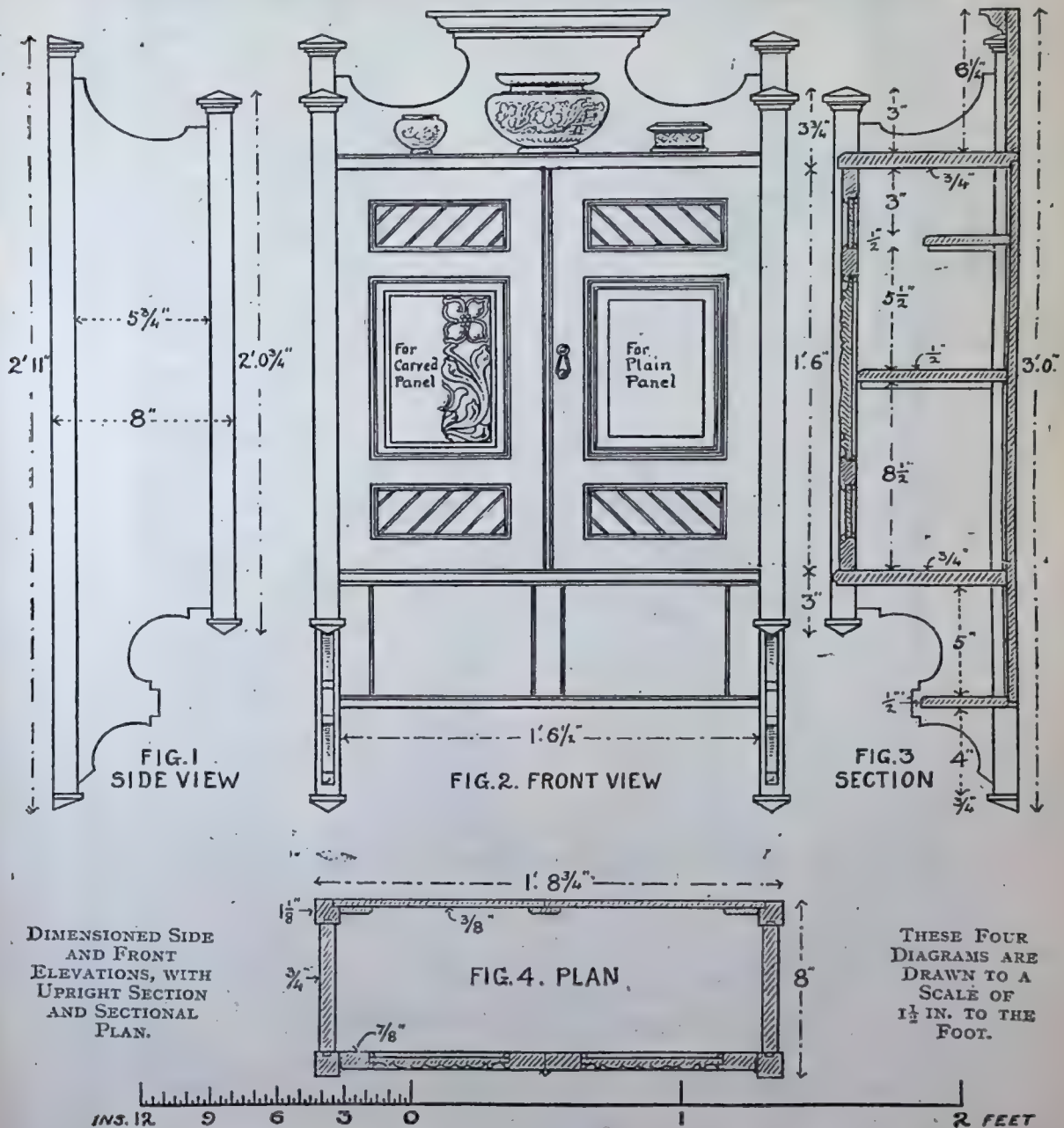
The front posts are 1 ft. 11½ ins. long net, without the caps—or 2 ft. 0½ ins. with caps. The front faces may, if desired, be carved with two narrow stopped flutes; or, as an alternative, the front edges might be stop-chamfered. As the width is only 1½ in., however, the posts may without disadvantage be left plain, especially if oak is the wood selected. The four posts are grooved to receive the ends. The back posts are rebated to take the back and pediment.

The pediment (1 ft. 6½ ins. between the posts and 6½ ins. high net) is fitted into the rebate of back posts at each end and doweled to the cupboard top. The capping mould (1½ ins. deep, by 1½ in. projection) is glued to the face of pediment at top and screwed from behind, the moulding (including portion of pediment which it covers) being returned in the solid with the chisel. If a moulding to be fixed on top of pediment is preferred, the pediment itself must be reduced an

inch in width. In this case the capping need only be 1 in.

The shaping of the ends is shown at Figs. 1 and 3, and from these diagrams all sizes may be taken. The depth of fitting over the posts is

board and by the lower shelf, it is well that these three shelves should be secured to the ends by draw dovetails and also notched to the posts. The grooving for the dovetails may run through, as the ends will be stopped by the posts.



8 ins., and thus the distance between works out at 5 1/4 ins. By means of the grooves cut in the posts the ends may be securely housed.

As the complete ends, with their posts, are held together by the top and bottom of the cup-

The two inside shelves may be supported by fillets or by bookcase studs, this depending on the use to which the cabinet is put. In the section, Fig. 3, two inside shelves are shown, a wide one and an upper narrow one. The latter is service-

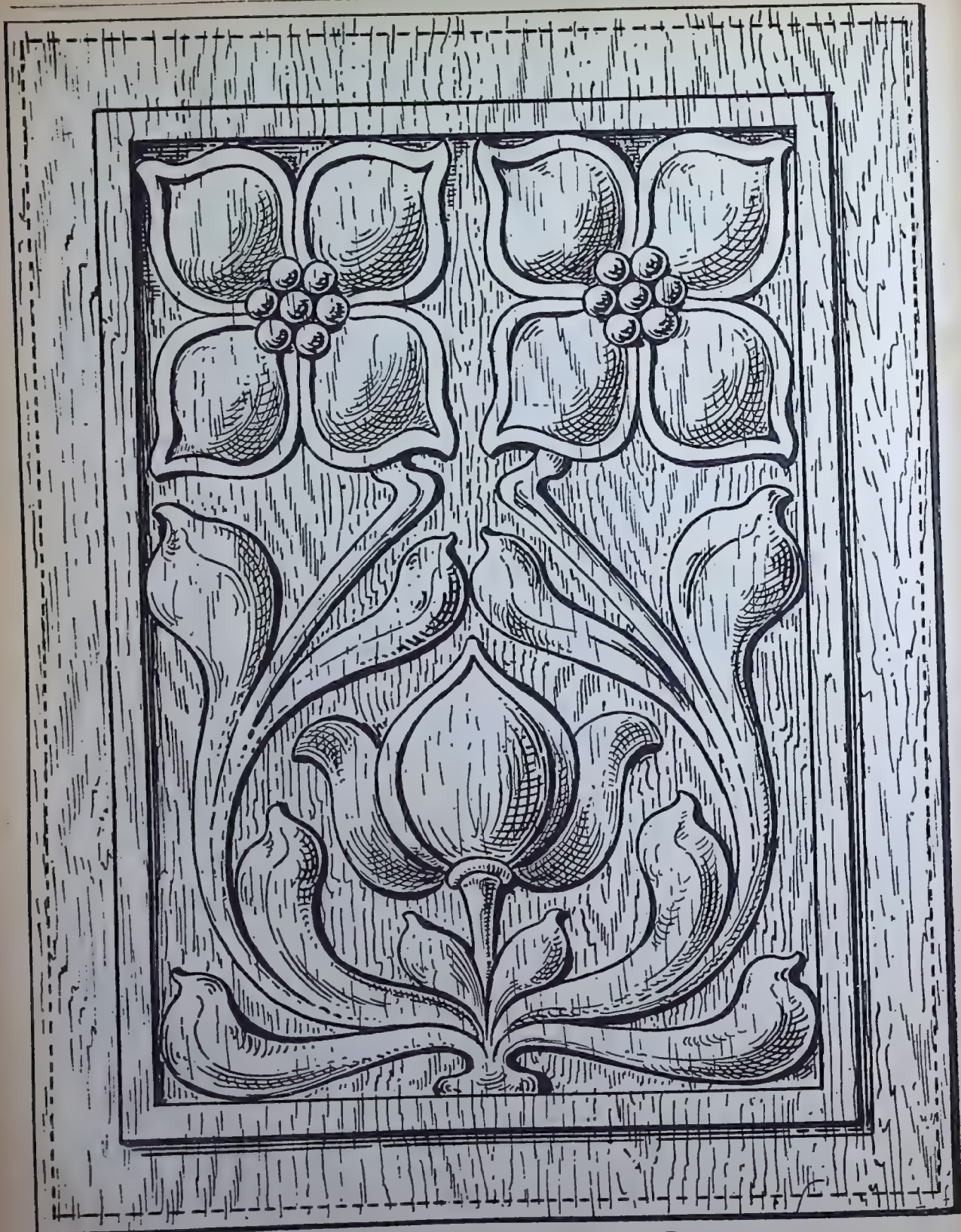
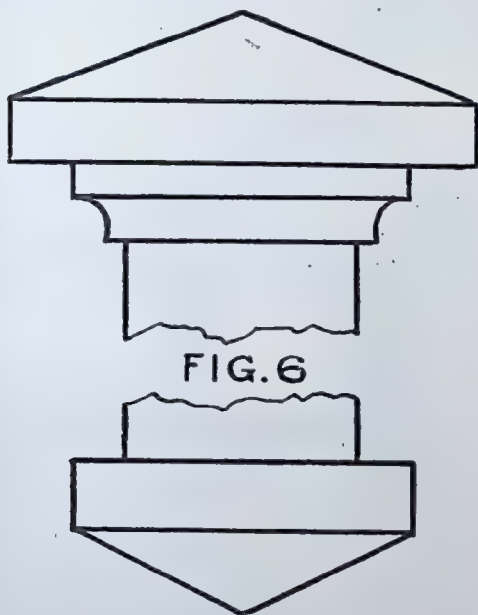


FIG. 5.—FULL SIZE DESIGN FOR CARVED DOOR PANEL.

able in the case of medicine cupboards, the narrow shelf being useful for sundries without interfering with bottles which may stand in front. The interior of the cabinet, however, may be fitted according to the requirements of the worker. From Fig. 3 it will be seen that the under edge of cupboard top and the upper edge of lowest shelf are rebated to take the $\frac{3}{4}$ in. back. The front of shelves may have a bead run on top edge, or top edge may be simply rounded.

The back may be fitted as shown in Fig. 3 and in plan, Fig. 4, fillets (about $1\frac{1}{2}$ in. wide and $\frac{1}{4}$ in. thick) being planted on as indicated. As an alternative, only that portion of the back which comes below the enclosed part may be of hardwood; in which case dry pine, tongued and grooved together, may be used for back of cupboard, this being rebated to back posts and bradded to back of shelves. The fillets would be dispensed with,



TOP AND BOTTOM CAPPINGS FOR ANGLE POSTS. FULL SIZE.

except for the part between bottom of cupboard and lowest shelf. This lowest shelf is 4 ins. or $4\frac{1}{4}$ ins. wide over all.

The doors are each 1 ft. 6 ins. long by $9\frac{1}{4}$ ins. wide, the rails and stiles with their mouldings showing $1\frac{5}{8}$ in. in width. The two inner stiles should be cut to $1\frac{7}{8}$ in. wide, to allow for the overlap of the $\frac{1}{2}$ in. astragal. A simple bead moulding may be run in the solid, or a moulding may be planted on. If no carving is to be introduced the doors may each have only one panel, the two intermediate rails thus being dispensed with. The carved panel is 8 ins. by 6 ins., and for the character of the design a thickness of $\frac{5}{8}$ in. should be allowed to obtain the necessary relief. A full size section of the carved panel (Fig. 5) is given at Fig. 9.

If the worker does not feel inclined to tackle the carving, but still likes the idea of a three-panelled door, he may substitute a plain panel with raised moulding. For the small panels the wood is cut so that the grain lies at an angle of

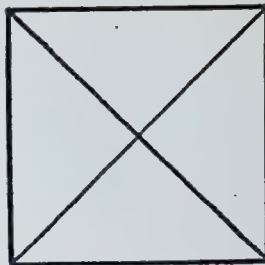


FIG. 7

PLAN OF CAP OF FRONT POSTS.



FIG. 8

PLAN OF CAP OF BACK POSTS.

forty-five degrees. V-shaped grooves, 3-16 in. wide, are then run across at the same angle as indicated.

The doors are hung with two pairs of 2 ins. brass butts. The wide inside shelf will provide a stop, but a cabinet bolt should secure the left hand door, while at the right hand a latch with drop handle should be fixed. Instead of being hinged with butts the doors might be hung on centres. In this case they must have rounded heels to work in hollows cut in the posts, and the doors will have to be adjusted before the work is finally glued up.

It is possible that some workers might like to make up this article as a hanging curio cabinet for the drawing-room. In this case the door stiles and rails should be reduced to a width of

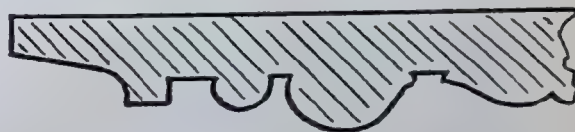


FIG. 9

FULL SIZE SECTION OF CARVED PANEL.

$1\frac{1}{2}$ in. and a bevelled plate panel fitted instead of a wood panel. Plate glass shelves, with square or round polished edges, might also be substituted for the wood shelves. The inside back, ends and bottom might be lined with plush; or, if thought desirable, the inside back might be fitted with a plain or bevelled mirror. Another method of finishing the inside is by ebonising.

For a smoker's cabinet or medicine cupboard it is better to leave the inside woodwork unpolished.

RONUK.—The proprietors of Ronuk Sanitary Polish have received a royal warrant of appointment to Her Majesty, Queen Alexandra.

The Question Box.

As one of the main objects of THE WOODWORKER AND ART CRAFTSMAN is to help its readers, questions of general interest dealing with any branch of handicraft will be answered on this page.

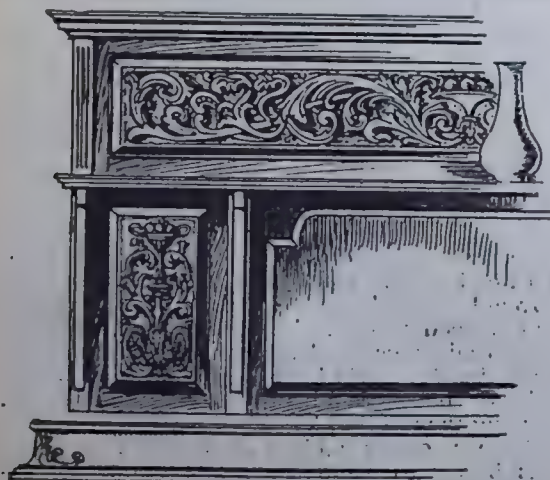
As it is impossible to reply fully in these columns to all queries received, questions on subjects within the scope of this Magazine are replied to by post under the following conditions:—

- (1) Questions dealing with distinct subjects should be written on different slips, on one side of the paper only, and the sender's name should be written on the back of each.
- (2) Questions should be accompanied, wherever possible, with fully dimensioned sketches, and correspondents are recommended to keep a copy of their Questions for reference.
- (3) A stamped addressed envelope (not post-card) should be enclosed.
- (4) Questions will be answered as early as possible after receipt, but when sketches have to be prepared, or when research has to be made, a short interval must elapse before the Reply can be forwarded. The insertion of Replies in this column cannot be guaranteed, but all Replies of general interest will be given when space permits. All Questions should be addressed to The Editor, THE WOODWORKER AND ART CRAFTSMAN, 57, Farringdon Road, London, E.C. 4.

Overmantel with Carved Panels.

[338] J. T. (Holyhead) writes:—"I intend making an overmantel similar to No. 258, which you inserted in reply to a question in issue of December, 1911. I have reduced the sizes a little, so the two side panels which I desire to carve work out at 10½ ins. by 5 ins. by ¾ each, and the top panel at 3 ft. 7½ ins. by 5 ins. by ¾ in. Could you please give me an idea or suitable design for carving the above panels, through the medium of the 'Question Box,' and oblige?"

REPLY.—As desired, we have sketched you a suggestion for the overmantel you wish to make up with panels, two to measure 10½ in. by 5 ins. for the sides, and one for the top to finish 3 ft. 7½ ins. by 5 ins. by ¾ ins. The framing round these can show about 1½ ins., the pilasters being about the same with, with three of four ¾ in. flutes cleanly cut. The shelf shown can be 5 ins. wide, with moulded edge, which would offer



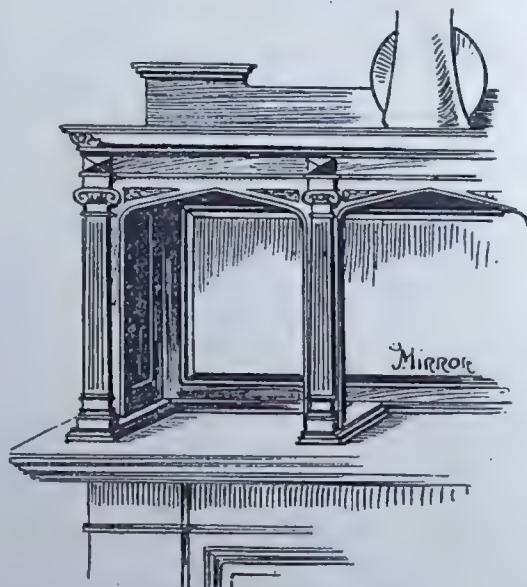
OVERMANTEL WITH CARVED PANELS (No. 338).

you an opportunity of carving with small leaf detail. This shelf may also be shaped to match the top outline of glass, and be supported on shaped brackets at each side of the end panels, which may also be carved with a pendant acanthus or fluted. The base and cornice

can each finish 1½ in. wide, or the base as sketched below can be fitted in accordance with the details given in issue of WOODWORKER for December, 1911. A hint is offered for working out the carving in the panels in foliated scroll, but as space is limited and the reproduction necessarily small, we should recommend you to look up the various designs that have been given in recent issues for details of parts which will be of great assistance to you in setting out what you wish to carve. See May issue, 1911, page 155; July, 1911, page 186; April, 1910, page 71; June, 1910, page 155; September, 1910, page 245; May 1st, 1909, page 63; or at a trifling extra cost we can supply you with any of our full sized supplements in stock, many of which are most useful for reference when setting out the detail to be carved.

Jacobean Overmantel.

[339] W. G. (Brockley) writes:—"I want to make an overmantel in the Jacobean style, but should like it in mahogany with box lines to match a Sheraton bed-room suite. Could you give me a few hints as



JACOBEOAN OVERMANTEL (No. 339).

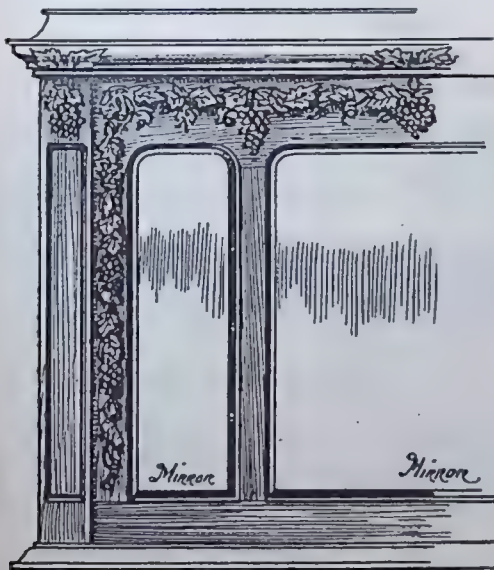
to the details? What moulding should I use for the cornice? As the suite referred to is in mahogany and I have a good deal of that wood by me I should naturally like to use it. If, however, you think the Sheraton suite would make the suggested overmantel out of place, I could then make it in oak for the dining-room.

REPLY.—In response to your enquiry, we have sketched you the suggestion for overmantel herewith, based on your own rough sketch. The whole thing would work out well in Jacobean style with Tudor shaped arches between the columns, but you will lay yourself open to criticism if you make the design up in mahogany, as Jacobean was of course an oak period before the introduction of mahogany into general use. With regard to dimensions, the height shown is 24 ins. to top of cornice, with a back rail (if required) an additional 6 ins. high. The cornice mould shows 1½ in. high, with a projection of 1½ in., the cornice

and frieze together being $2\frac{1}{2}$ ins. high, including the $\frac{1}{2}$ in. bead. The columns can be of 2 ins. by $\frac{1}{2}$ in. stuff fluted and carved with capitals, or the capitals may be replaced by slips of $\frac{1}{2}$ in. mould, returned on themselves with the chisel. The columns can project, say, $\frac{1}{2}$ in. or so from the face of the arches, the uprights for these being about $2\frac{1}{4}$ ins. wide net finished, by $\frac{1}{2}$ in. thick, with a chamfer or quirk round the line of the shaped opening to define it. Small leaf carved spandrels are also indicated in the rail forming the heading of arches, which would require to be about $2\frac{1}{4}$ ins. in widest part where the uprights are mortised in. The toes projecting from the back will be necessary to tie the lower ends of columns, and may be cut and moulded to finish 3 ins. wide by $\frac{1}{2}$ in. thick at least. The end panels can be of $\frac{1}{2}$ in. thickness, framed up of stiles and rails $1\frac{1}{2}$ ins. wide, with beaded in panels of $\frac{3}{8}$ in. thickness net. The framing of back will require a top rail 6 ins. wide; bottom rail, $1\frac{1}{2}$ in.; and stiles $2\frac{3}{8}$ ins., against which the end panels will butt. The sight opening is shown moulded to receive mirror with 1 in. bevel, to be beaded in from the back.

Carved Overmantel with Three Mirrors.

[340] H. E. G. W. (Birmingham) writes:—"Not long since I came across an overmantel which took my fancy, and I am desirous of making one on similar lines. A sketch enclosed gives an idea of the design, and I would like you to give me detail dimensions for making same. The sectioned parts were carved, the main design being based on the vine, with bunches of grapes. The whole design was worked out in oak, and had a very neat and pleasing effect. I am only an amateur, but think I can easily manage the constructional work."



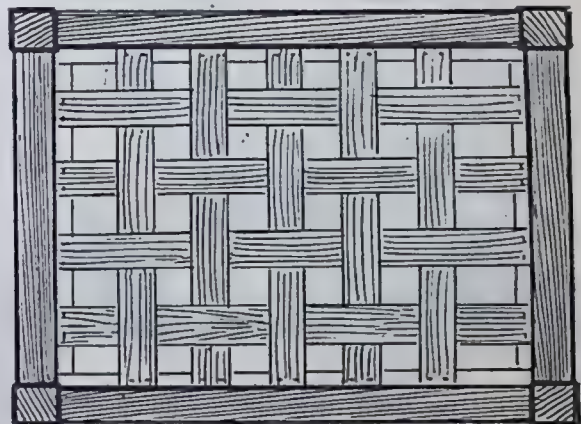
CARVED OVERMANTEL WITH THREE MIRRORS (No. 340).
4 ft. or 4 ft. 3 ins. wide by 3 ft. high.

REPLY.—We note the sketch you enclose with your enquiry, and reproduce it here, as it is on somewhat different lines from most others we receive. With regard to dimensions, these will of course depend somewhat upon the length of mantelshelf upon which it will rest and to a certain extent upon the style of

the room also. Taking the mantelshelf as 4 ft. 6 ins. long, the overmantel can be 4 ft. wide over uprights, or 4 ft. 3 ins. over all, and so sketched would be 3 ft. high. The capping mould, or cornice, would be $4\frac{1}{2}$ ins. with a projection about $1\frac{1}{2}$ ins. The pilasters would be 3 ins. wide with $\frac{1}{2}$ in. projection, and sunk panelled with ovolo mould, stopped flush with the top and bottom of mirrored panels. The stiles framing the mirrors are $2\frac{1}{2}$ ins. wide, or 3 ins. may be allowed for those next to the pilasters which carry the carving. The top rail under cornice shows $6\frac{1}{2}$ ins. wide, and the lower rail $2\frac{1}{2}$ ins. wide, the base mould being $1\frac{1}{4}$ ins. to 2 ins. wide. Right size for mirrors would be 22 ins. high by $6\frac{1}{2}$ ins. wide for side panels, and 18 ins. wide in centre. Stuff 1 in. thick will do for the framing generally, and the pilasters can be $1\frac{1}{4}$ in. thick, or the framing may be made 3 ins. wider each end and have the pilasters formed by gluing on lengths of $\frac{1}{2}$ in. stuff, in which case the panel openings can be previously cut out and moulded, which will save a considerable amount of work with the chisel. The applied carving of vine leaves and grapes is roughly indicated, and the finished effect if neatly fretted and carved up should look very well. We may add that we are always pleased to assist old readers if they will state their requirements clearly.

Chair Cushion.

[341] R. H. B. (Watford):—"I have just finished the adjustable-back arm chair given in THE WOODWORKER AND ART CRAFTSMAN, issue of September, 1911. I have fixed the canvas in which the cushions rest as per instructions given, but find that when it



WEBBING FOR CUSHION OF ARM CHAIR (No. 341).

has been in use the canvas sags and the cushion is sunk in the centre, owing to the canvas bottom stretching. I would be obliged if you could give me a hint in which I could alter the seating. Would an extra piece of wood let in the sides of the chair and the canvas tacked on to it stop it? Or would that have a tendency to make the seating harder? The cushions are made of wood wool, alva, &c., in canvas, buttoned and tied and covered with cretonne. Would you also kindly give me a hint as to making a satinwood water stain. I have had one or two stains that I have bought, but they have a rather yellow tint. I should like a brown tint."

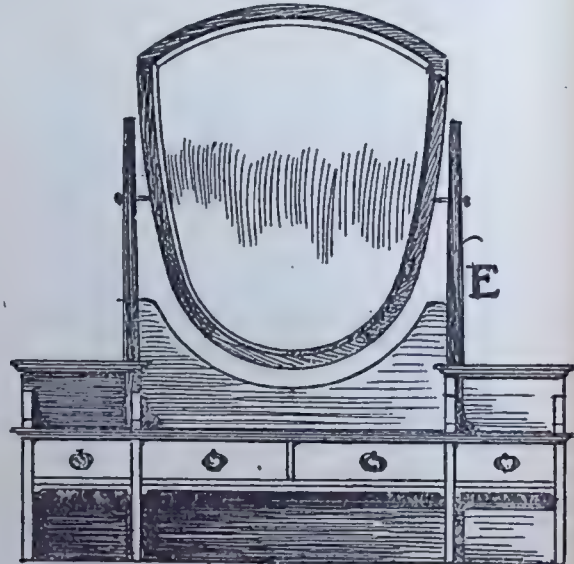
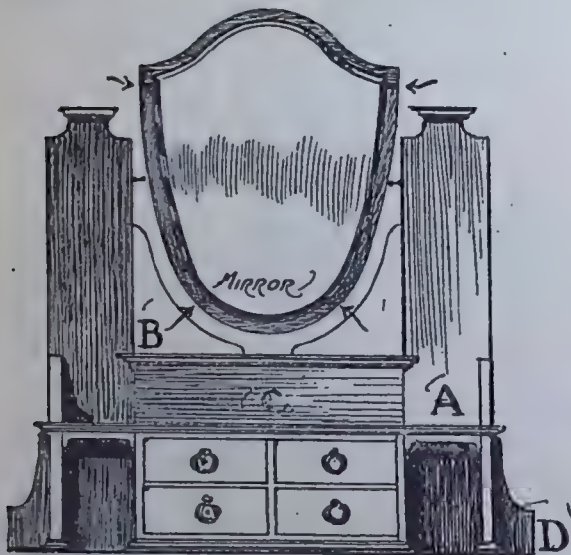
REPLY.—The cushion for the chair referred to should have been made up on a frame, cross webbed if a slight sagging is objected to. Possibly the canvas you have used is not of sufficiently stout quality to contract the sagging, in which case you could use it doubled. As you have your cushion made, however, we should think your best plan would be to web the well of the seat after the manner of the plan sketched herewith, for which purpose you could fit slips within the seat framing to form a rebate for tacking the webbs. If you can borrow an upholsterer's webb strainer, you will find it of great assistance to you in getting the cross webbs taut.

With regard to the satinwood stain we should suggest adding a little madder to your own stain, or a little Vandyke brown and gamboge should help you. With regard to this polishing, your method is not quite the usual way of setting to work, but you can obtain a good final surface finish to the wood if the polish is well rubbed down.

Dressing Chest Mirror.

[342] J. R. (Ammanford) writes:—"Can you kindly inform me through the medium of your 'Ques-

if fitted, should be smaller than shown, and might be left out altogether. A strip of $\frac{3}{4}$ in. mould, glued and pinned on along the line of the upper edge of rail (C), would improve the part, and the edges of shelf above drawers could be moulded to agree with front and sides, as also the base of drawers and side brackets. It might improve the outline to fit 3 in. extension brackets, as at D. The sketch is not quite to scale, but if you allow a height of 8 ins. for drawer case over all, and 4 ins. width for back rail above it, you will be about right. Glass frame could be $1\frac{1}{4}$ in. by 1 in. thick, and sight size for glass 27 ins. by 19 ins. This, if the chest is 2 ft. 6 ins. high, will make the height over all about 6 ft., which is a trifle in excess of that usually allowed. You might, however, lighten the whole thing by replacing the uprights (A) by tapered columns, as E, to finish $1\frac{1}{4}$ in., tapered to $\frac{3}{4}$ in. by $\frac{3}{4}$ in. thick at top. This arrangement, whilst retaining the four drawers, would allow of reducing the height of back to 5 ft. 6 ins. The mirror frame can be put together in four pieces, as indicated by arrow heads, to be neatly dowelled. Back framing can be mortised together or dowelled. The drawer case would be best dovetail-grooved together, but may be dowelled and screwed through to



SUGGESTED SKETCHES FOR UPPER (MIRROR) PART OF OLD DRESSING CHEST (No. 342).

tion Box,' how best to make a glass frame for an old 3 ft. 6 ins. oak toilet chest as per sketch? I think the supports for glass frame would suit at about 6 ins. by 8 ins. wide, as shown, with 2 ins. wide framing for glass. I have some old oak by me which I intend to use, but which has still a lot of old polish and varnish on it. Can you tell me of anything to remove this? Scraping would take too long because of the mouldings, etc.

REPLY.—We offer alternative sketches of the upper part of the dressing chest you wish to make, set out on the lines of the particulars you enclose with your letter, but we think you will find the result somewhat clumsy and wooden. The uprights (A) will be altogether too wide at 8 ins.; try $4\frac{1}{2}$ ins. instead. The top ends might be shaped and moulded at top, as indicated, as an alternative to merely rounding off. The brackets (B),

back from behind. In answer to a further question, try a strong solution of soda, used hot, to remove the old varnish or polish, afterwards carefully washing off all traces of soda from the surface before re-polishing. Mouldings and crevices can be got at with a stiffish brush.

Fishing Punt.

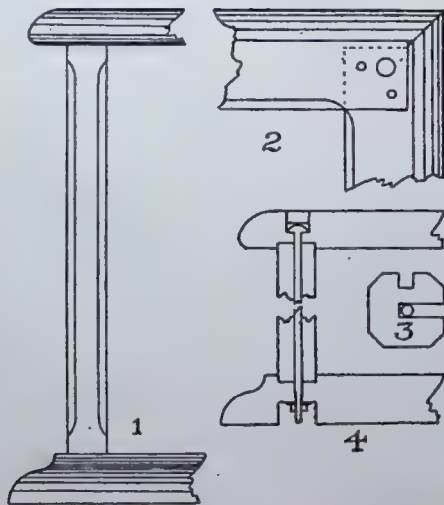
[343] C. (Barnet) writes:—"I propose to build a fairly substantial punt for fishing purposes—not one of those slender mahogany creations, but of sufficiently roomy proportions for two anglers. Such boats are, as you know, common from Richmond upwards. I do not know the proper dimensions, and have therefore endeavoured to draw it to scale as near as I can guess. I think the professional fishermen make their own punts, generally made to take three. I should

like to know whether the boards being put in place when dry would tend to swell, and so burst off the battens, &c., and therefore whether a space (say $\frac{1}{4}$ in. should be allowed? It would be well painted, three coats, and might be tarred under bottom. Also where the joints would come in the bottom would it be best to liberally bed the joints in old lead or pitch? What is the best wood to use?"

REPLY.—Your design seems about correct, and we do not think your depth or width too great. If you attempt to allow for swelling in fixing the board you will court failure. Use narrow boards and fit well; they will not then come apart. By using the section you show, the boards can be screwed together, using brass screws, of course. You should bed all joints where possible in paint (not in pitch), but you might afterwards use pitch on the inside. The outside should be thoroughly painted. It might be a good plan to place a rush or a piece of cotton cord along the rebates of the board before each one is fixed on; this would swell on getting damp, and would then make the joints watertight. Your idea of construction seems correct, and you should turn out a serviceable punt. All screws used should be of brass, and all nails either zinc or copper. The wood should be yellow deal or pine.

Glass Case for Ornament.

[344] A. R. B. (Dublin) writes:—"I wish to make a glass case in which to place an ornament, and shall feel much obliged for your advice on the subject. The case is to be 18 ins. by 10 ins.; height about 10 ins. The back will be wood, but the top, ends and front glass. What thickness should the front uprights and cross pieces be? How should they be fitted to one another, and into the bottom? What kind of wood



DETAILS OF GLASS CASE FOR ORNAMENT (No. 344).

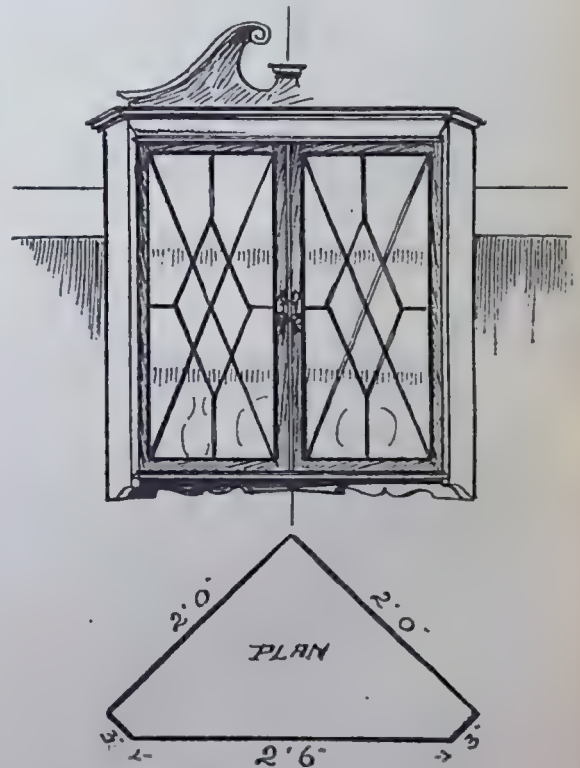
should be used? Should one end be constructed as a door as a means of putting in the ornaments? My fear is that narrow uprights and cross pieces could not be made firm enough to bear the glass, and wide ones might give a clumsy appearance."

REPLY.—A glass case such as you wish to make is not an easy job for an amateur, but if you follow out the instructions given here you should come out

safely at the finish. The bottom should be one inch thick; the top slightly less, say $\frac{3}{4}$ in.; the corner pillars may be $\frac{3}{4}$ in. square (actual finished sizes). Both the top and bottom should project and have a moulding worked round as a finish, while the pillars may be chamfered. These are all shown in Fig. 1. The top should be 2 ins. wide, the front edge mitred, but the actual jointing done with mortise and tenon (see dotted lines in Fig. 2) and fixed with two small pins as shown. The pillars should be grooved as in section Fig. 3, one groove being deeper than the other. In this latter will fit a slight bolt, which will pass through the top and bottom, fixing with nut under the latter as in Fig. 4. This method of construction will allow the case to be lifted about by the top. When required to be open, to get at the ornament, the four nuts underneath can be taken off, when the whole will come apart. The pillar should be let into the top and bottom solid as shown. Any kind of wood may be used; the easier way will be to use soft wood, finishing with paint and enamel.

Hanging Corner Cupboard.

[345] E. R. (East Ham) writes:—"I should be glad if you would help me with a sketch of a corner china



HANGING CORNER CUPBOARD (No. 345).

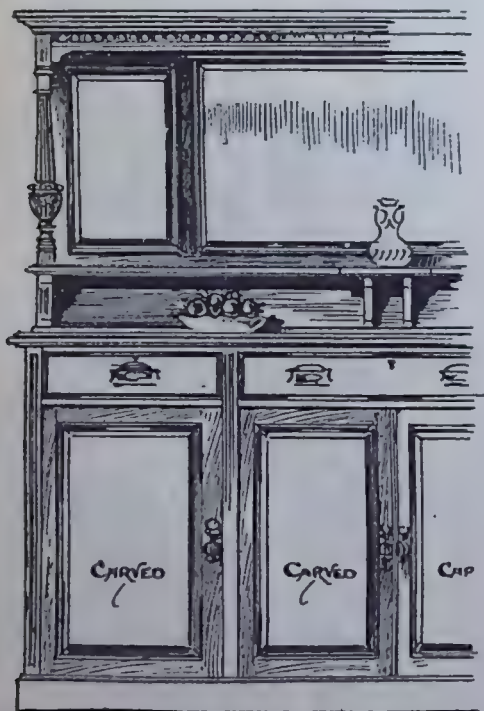
cupboard, to hang or be supported on brackets. I only want it large enough to hold an old tea service of 40 pieces, and intend making it in mahogany. I thought of having a pair of doors on the front, with diamond shaped glass. Which would be the best moulding to use and what method of fastening?"

REPLY.—We should think your corner cabinet would work out pleasingly on the lines indicated in the

sketch herewith, the mahogany being stained to a dark Chippendale colour, with a dull finish. Height of cupboard is shown as 3 ft., or, including the bracketed lower ends of canted corners, say 3 ft. 2½ ins. The width across front is 2 ft. 6 ins., which, with an angle measurement on wall of 2 ft., will give the cants as about 3 ins. wide. If you can carve these, cants might be panelled with a cock bead, and have a bow and pendant husks half way down its length. The doors would come out at 2 ft. 8 ins. by 14 ins. with 1½ ins. stiles and rails of 1 in. stuff. The barred panel design shown should be worked out in astragal mould ¾ in. or ½ in. wide, the door panel being moulded to a half-section of the astragal so that the cuts intersect. A section of ogee mould is shown below the top, which will give the part a little more importance, or the part might be kept flat and finished with a row of neatly cut ¼ in. flutes. Or another neat effect would be to dentil a member of the moulded top. A pediment may be fitted at front as indicated, or the same can be worked at the angle to be mitred in corner. The lower ends of back are also shown cut to shape by way of slight relief. Alternative patterns for doors have been given in the last two volumes.

Sideboard With Carved Panels.

[346] L. H. (Whitby), writes :—" I wonder if you could supply me with the following information. I wish to construct a sideboard, for which I wish to use



SIDEBOARD, 6 FT. 7 INS. WIDE, WITH CARVED PANELS
(No. 346).

our carved panels, two 23½ ins. by 14½ ins., and two 23½ ins. by 12 ins. The two latter are those given with your issue of February, 1912. The measurements given are over framing; they are framed in 1½ in. thick oak."

REPLY.—So far as we follow the rough sketch sent

with your letter we should think the suggestion here-with would meet your needs for the fitting of the panels mentioned; but, arranged as you require in the lower doors, the length of the sideboard will work out at about 6 ft. 7 ins., which may possibly be a trifle larger than you anticipate. If you make the height of table top 3 ft. 6 ins. you will have room above your cupboards for three serviceable drawers suitable for cutlery, tablecloths, etc. The pilasters can be 1½ ins. wide with three flutes, or the portion in line with the drawer may be carved acanthus with the flutes starting below this. Top can be ¾ in. or ¾ in. net, lined up to 1½ in. thick by 6 ft. 7 ins. by 20 ins.; drawer fronts 5 ins. wide by 1 in., moulded; doors to frame own panels, framed up of stiles and rails 2½ in. wide, moulded, by ¾ in. net thick; bearer rails under drawers, ¾ in. by 3 ins.; plinth, 4½ ins. high; carcass ends, 19 ins. wide, of 1 in. stuff; back framed up 3½ in. by ¾ in. with ½ in. panels; height of back 3 ft. framed up of 4 ins. outer and 3 ins. inner stiles, 7 ins. top rail and 9½ ins. lower rail, mortised and tenoned together, and moulded; sight size of mirrors as shown, 3 ft. 5 ins. by 19 ins. high, and 11 ins. by 19 ins. high, with 1 in. bevelled edges; columns can be turned up of 3 ins. by 3 ins. from pieces 2 ft. 2 ins. long, and are indicated as having fluted or reeded shaft and carved swell. The shelf under mirror can be 5 ins. wide, with a projection in centre, supported by two brackets of 1 in. stuff, 5 ins. by 5 ins. The end brackets under column can be of 2 ins. stuff, carved or fluted. A ¾ in. section can be fitted to lower part of back as a finish. The cornice is shown as 4½ ins. high, made up of a 2½ in. mould, and 1½ in. frieze rail, which might be carved. A narrow apron piece is fitted between the columns to ease the squareness. The back can be of 1 in. stuff throughout. If you set out the sideboard to the proportions given above, you will be able to ascertain the sizes of stuff required by following the list of parts given with the article on sideboard published in the October issue of 1911.

Sap Oak.

Sap oak has suffered unjustly from abuse, and has been neglected because it has not been properly understood. The sap part of oak has been considered inferior, and the outside or sappy boards have never been regarded with much favour. All the same, if properly cared for from the time it is cut until it is used, sap oak will often give good results. For certain schemes of finish in cabinetwork it is really a better body to work on than heart oak. It is the same way in flooring. If one but takes care of the sap and segregates it from the heart stock, so as to get it all together for harmony in texture and colour, there is a chance to do just as effective work with sap as with heart. There is no comparison of sap with heart for exposed work outside, where durability is an object; but with the modern systems of treating wood, the sap part of oak is being made much more useful and durable even for outside work. If sap oak flooring is selected and laid with care, and properly stained before finishing, it will present a beautiful appearance. The same applies, but in a higher degree, to furniture and cabinetwork. The only thing necessary is to take care of the sap stock from the time it is cut until it is ready to be used. To have the sap dominating in the particular work in which it enters, and the work carried out right, one can get new appreciation of the possibilities and beauties of sap oak.

Manual Training.

The Importance of Keeping Boys Interested in Handwork.

INSERTED with this month's WOODWORKER AND ART CRAFTSMAN will be found a copy of the February issue of *Handicrafts for Boys*, an exceedingly useful monthly (halfpenny) magazine published by Handicrafts Limited.

It is well that the attention of Handwork and other Teachers should be drawn to this excellent little journal. Only a few days ago, at the Conference of the English Association, severe criticism was levelled against boys' story magazines, more than one speaker attributing to these the responsibility for the prevalence and spread of ignorance. Without pausing to agree with or contest this charge, it will be admitted by all that the devouring of exciting or amusing stories, which make no call on either intelligence or judgment, must be injurious to a boy, and in every part of the country parents are welcoming the efforts now being made to interest their boys in Handwork or in the cultivation of some equally healthy pastime.

It was to stimulate those efforts that *Handicrafts for Boys* was planned just over a year ago. Throughout its first volume (now before the present writer), in practical usefulness, in interest and in general suitability to the handy boy of average taste and intelligence, it maintained a consistently high level, and the second volume promises to be even better. The aim of the magazine has been to encourage boys to use their hands *usefully*—to learn how to "make things," to execute little repairs at home, and to produce what may be serviceable out of waste material. This by no means exhausts its scope. Handwork of a more ornamental or more advanced kind is dealt with; but it is recognised that the ordinary boy has little in the way of pocket money to spend on tools and materials, and what the magazine seeks to instruct this ordinary boy how to enjoy the pleasures and profits of Handwork at the minimum of outlay.

Special features are made of model and toy making. The models and toys given are working ones; all are made in wood, and in no case are there difficulties which the average boy cannot overcome. Among the models already described may be mentioned: a model gun, a power hammer, mangle, windlass, crane, miniature garden swing, field roller, copper printing press, etc. Aeroplane models have formed more advanced exercises, whilst there have been others of a more elementary character.

The general woodwork articles—most of them, of course, simple—are characterised by care in design, in illustration and description. The uses to which discarded material may be put are well shown in many chapters, and there are numerous useful pages on doing odd jobs about the house. There is no lack of variety, and the

magazine is clearly directed by those who are not only interested in the boy, but who also *understand* him. For several months there has been an excellent series of prize competitions, all of which are carefully designed to exercise some faculty. All through there is nothing aimless; every column is considered, and every diagram has its message.

Handicrafts for Boys circulates in schools. It is not a child's paper, nor is it a teacher's journal. It is a boys' magazine, specially written up to the level of what an intelligent, handy and thinking boy can do. In a great number of day schools *Handicrafts for Boys* has been taken up by teachers who appreciate its value, and who circulate it widely (at one halfpenny per copy) amongst the boys. At other schools it is issued as a special supplement to the School Magazine. Carpentry Instructors at schools make regular use of the models given as exercises in the Carpentry Class, and in the prize competitions for woodwork it frequently happens that several sets of entries come from the Woodwork Classes of different schools.

Among readers of THE WOODWORKER AND ART CRAFTSMAN are many Manual Training Teachers and also Instructors of Woodwork at Day Schools and at Evening Classes. To the attention of these the accompanying copy of *Handicrafts for Boys* is directed. Schools are supplied with monthly copies at the rate of 1s. for twenty-five, 2s. for fifty, or 3s. 6d. for one hundred, carriage paid.

One sample copy per month will be sent by post for one shilling. Copies of Volume I., containing the first twelve numbers (January to December, 1912), strongly bound in cloth, may be had for one shilling, or post free for 1s. 3d. Address: Handicrafts Limited, 57, Farringdon Road, London, E.C.

The Woodworker and Art Craftsman, Volume XVI.

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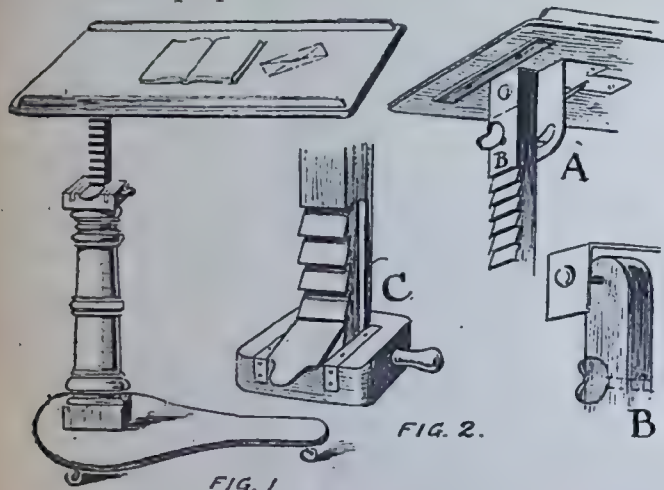
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ADDRESS.—THE WOODWORKER AND ART CRAFTSMAN, 57, Farringdon Road, London, E.C.

Adjustable Bedside Table.

IN response to enquiries frequently received, we offer here a few sketches and particulars for the construction of an adjustable bedside table. The dimensions given are those of a medium sized table, which can be tilted conveniently for use as a reading stand and easily adjusted to a suitable angle by the user whilst in bed. A perspective sketch of table is seen



ADJUSTABLE BEDSIDE TABLE.

DETAILS OF RATCHET.

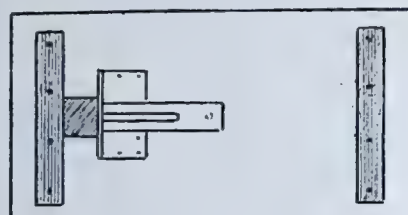


FIG 3

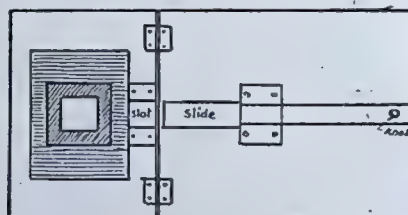


FIG 4.

ALTERNATIVE PLANS.

at Fig. 1, dimensions being 2 ft. 6 ins. long by 1 ft. 4 ins. wide. The top is of $\frac{1}{4}$ in. thickness, with rounded corners and edges. Two slips, 1 in. wide by $\frac{1}{4}$ in. thick, are screwed along the length, as shown, to prevent the slipping of articles placed thereon. The pillar support should finish $4\frac{1}{2}$ ins. on the square, and can be turned up out of a piece 2 ft. long. The centre should be square, bored through; or the column may be built up of four pieces 1 in. thick, with a 2 ins. by 2 ins. clearance in centre, sufficient to allow the adjustable ratchet to work easily up and down. The base is intended to project under the bed, and should finish about 2 ft. 3 ins. by 1 ft. 3 ins. over all, with a set of three castors fitted one each side of widest part and one at extreme of arm. A view of parts, as seen from under top, is sketched at Fig. 2. The V-shaped notches forming the ratchet start about 5 ins. below the top end, and can be spaced 1 in. apart. The top end of ratchet is rounded off, and will be pivoted on a bolt, entered through the metal plate, as seen. The plate is about 12 ins. long by $7\frac{1}{2}$ ins. wide, and is made with a quadrant extension (A) of about $5\frac{1}{2}$ ins., with a stout angle piece to counteract strain. Behind the quadrant piece the top pivot is adjustable by a fly-nut. This should be understood from the enlarged sketch (B), the guide bolt upon which the cut-out portion works being adjusted by the lowest fly-nut. Sheet iron $\frac{1}{4}$ in. thick is suitable for the metal fitting. The method of adjusting the ratchet is shown at C, Fig. 2. A brass clutch or clip is pivoted on brass angle pieces to act loosely. It is screwed on to set flush with the top block, and as the ratchet is pulled up the clip drops automatically into the notches, so that without hindering the raising of the table top to required height all downward slip is

effectually prevented. By pressing the tail of the clutch it can be readily disengaged from the notch in which it rests. The ratchet, as explained, is fitted loosely, but it can be steadied against lateral play by entering a pin through the side of block into a corresponding groove in the manner indicated (C). An additional plan of the underside of top is given to assist in making matters plain, the metal work being left in outline and the woodwork shaded (Fig. 3). The base should be of 1 in. thickness, shaped to the outline

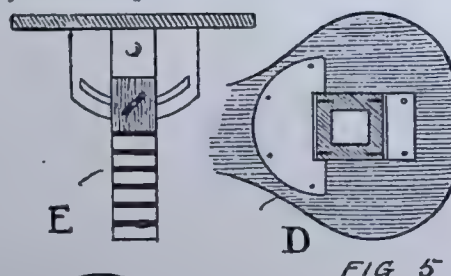


FIG 5

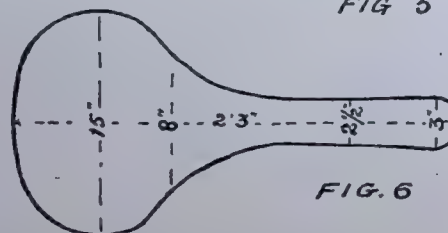


FIG. 6

DETAILS OF BASE, ETC.

plates, screwed on as indicated. By referring to the illustrations, the action of the quadrant plate, sketched at Fig. 4, E, should be readily understood. These bed tables are usually made to tilt, and not to

fold down, but we offer a suggestion which might be carried out if the latter arrangement were preferred. Fit a block about $1\frac{1}{4}$ ins. thickness to the underside of top firmly by dowelling or stub-tenoning in such position that a length of, say, 1 ft. 6 ins., would be available as a hinged fall down flap. When up flush the flap would be supported on the underside by a slide fitted to push home into a corresponding screwed-on slot. A screwed-on support is indicated in centre of flap, and the slide might be cut with a shoulder to bear and stop against this when the slide is withdrawn from the slot. This would keep the slide in position under flap when down, a knob being fitted for purposes of gripping in use. The plan (Fig. 4) should assist in making this little arrangement clear.

Invalid's Bed Rest.

Below are given sketches and brief directions for a back rest suitable for a bed-ridden invalid. The framing may be made of beech, to finish $1\frac{1}{4}$ in. by $\frac{5}{8}$ in. thick net, halved together, with a round-headed brass screw through each joint, with the exception of the top shaped rail. This latter should be cut and tapered to shape, to be rebated or dove-tailed to stiles and afterwards stiffened by two screws entered through each joint at a slight angle. The back support is simply a rectangular frame hinged to the top rail. When opened to the required angle the back support can be kept in position by a cord knotted and passed through small screw eyes, as indicated in the sketch. A useful size for the bed rest will be about 18 ins. high by 15 ins.

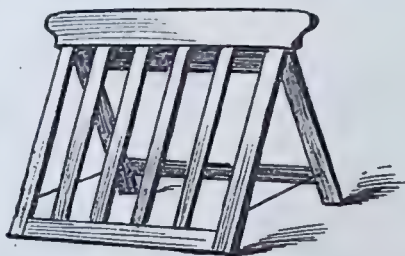


FIG. 1.—INVALID'S BED REST.

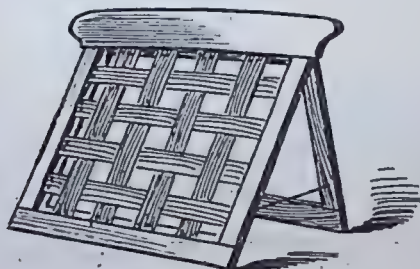


FIG. 2.—ALTERNATIVE SKETCH.

wide, or the height may be increased if a rest for the head is required. Two designs are indicated, Fig. 1, showing four upright slats, $1\frac{1}{4}$ in. by $\frac{5}{8}$ in. stubbed into the framing; and, alternately, Fig. 2, which indicates the framing as being webbed after the manner of a chair seat. The webbing may be interlaced as shown or arranged diagonally, and may be either nailed into a rebate or simply on the face of the framework. To prevent the pillows sinking these may be looped round top of slope by a tape passing through two screw eyes placed behind the top rail for the purpose. It may be added that the above will serve for any ordinary purpose, but in the event of an affection of the spine being in question it would be prudent to consult a surgeon on the matter of supports as specialities are frequently necessary in such a case.

British Ceramics.

THE British Ceramic sections at the recent Brussels and Turin exhibitions were each notable displays of enterprise in artistic manufacture. At Turin last year British exhibits occupied some 263,000 square metres (a metre being 10 ft.) as compared with Germany's 30,000 and France's 16,000. In spite of this the business value to the firms concerned was probably not so good in result as at Brussels, owing to the fact that Turin was less attractive as an international centre. This value of Belgium leads to the hope that at the Ghent International Exhibition next year British manufacturers will show equal enterprise, not only in placing their wares before the Continental market, but in bringing them to the notice of other continents who are sure to be well represented amongst the visitors. Ghent is doing its part with excellent spirit. Profiting by the disaster at Brussels extra safeguards and precautions are being installed against fire, and the surrounding and setting of the Exhibition will be far more spacious and effective than at the capital.

Belgium itself offers several features of interest to the worker in porcelain. It was in 1750 at Tournay (then in French Flanders) that a factory flourished and employed 250 hands in making a beautiful white porcelain like Sevres with a glaze brilliant and perfect. The casting process was used at Tournay long before its introduction in any other European country, and very light wares were possible. The Sevres style of decoration was adopted—roses and ribbons on a rich royal blue ground with gold tracery. The factory still makes soft paste porcelain, chiefly now domestic ware only. Ghent itself has enterprises engaged in the manufacture of statuary and religious tableaux.

In the sumptuous guide to collectors on pottery and porcelain, a new edition of which was published last year, the author (Mr. Frederick Litchfield, the well-known authority) says that this branch of industry showed to great advantage, and was the pride of the British section. The Royal Worcester Porcelain Company was unrepresented, but with that exception nearly all the leading manufacturers provided representative exhibits. Minton's, Josiah Wedgwood and Sons, and Doulton showed that they had maintained their high standard of excellence. The work of Goulton, the Crown Staffordshire Porcelain Co., George L. Ashworth and Sons, of Hanley, and other firms proved that a marked progress in the manufacture of ornamental and domestic china had been made; but the surprise of the Exhibition was the great advance in quality of artistic pottery made in England; as evidenced by the beautiful exhibits of Bernard Moore of Stoke-on-Trent, W. Howson-Taylor, of Smethwic near Birmingham, the Pilkington Tile and Potter Co., of Manchester, James Mackintyre, of Burslem, Lovatt, of Langley, and others. One cannot praise too highly the exhibits of some of these potters, and collectors who include specimens of modern work should certainly secure examples. We particularly recommend the flambé pottery of Bernard Moore, the Ruskin ware of W. Howson-Taylor, and the Lancastrian pottery made by Pilkingtons under the direction of Mr. William Burton, who has contributed so much to the literature of Ceramics. These wares are all well potted, made of good body, and the reproduction of so many of the old flambé colours and glazes of K'anghsi porcelain, with introduction of iris tints and colour expressions new to the art, indicate a renaissance of the potter's art in Britain.

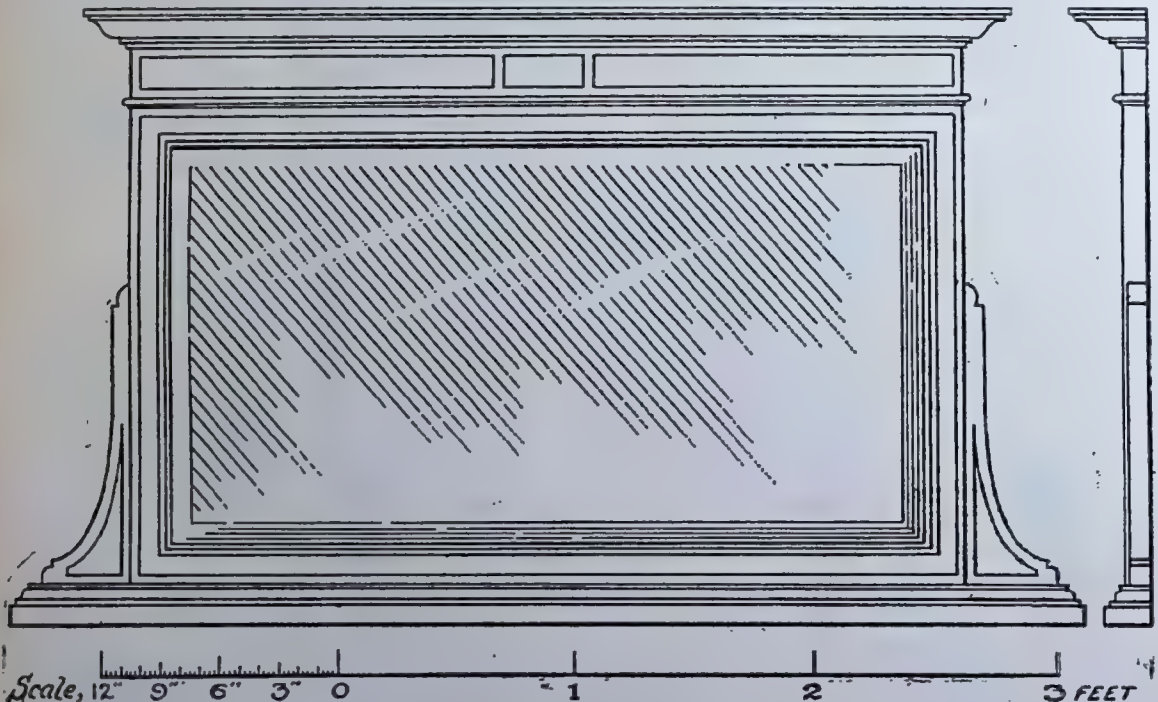
A Large but Simple Overmantel with Spacious Mirror.

IT frequently happens that a woodworker has to construct an overmantel for a fairly large mantelshef, but, in matter of cost, is tied down to something in which he cannot afford to spend much time. Nothing looks worse than a small, stunted overmantel above a large mantelpiece in a spacious room, and with a five-foot (or more) length of mantelshef it is idle to have a short or low piece of wall furniture above. If an overmantel of adequate proportion cannot be afforded, it is better to abandon the idea of having one, and fill the wall space with a suitably framed picture.

and height proportionately; should the shelf be less, the overmantel may be shortened so far as length is concerned, but need not be diminished in height unless the ceiling is very low.

The height must be determined not only in relation to length, but also in relation to the height of wall space above the mantelshef. In deciding upon height, too, what has to be watched is the proportion of the mirror. The proportion given in our sketch (the daylight size is 38 ins. by 20 ins.) is a good one, but the height could stand either an increase of 2 ins. or a decrease of 1 in. according to whether the ceiling were high or low. This is a matter that must be decided on the spot by the worker.

The article as drawn consists simply of a framed mirror, with base below, a bracket at each side,



SIMPLE AND EFFECTIVE OVERMANTEL, WITH LARGE MIRROR.
Size 4 ft. 6 ins. over Base, by 2 ft. 7 ins. high.

It is always possible, however, to construct an overmantel at a moderate cost by using a large mirror which will monopolise most of the space. Mirrors are features that are never tiresome, and even a mirror with little woodwork around it except the frame is an appropriate piece of furniture above the fireplace.

The simple design shown here is for a large yet comparatively inexpensive overmantel, the size of which may be varied according to individual requirements. The size given (4 ft. 6 ins. over base, by about 2 ft. 7 ins. high) assumes a mantelshef of any size from 4 ft. 6 ins. up to 5 ft. in length. If the mantelshef exceeds this, the overmantel will have to be increased in length

and a frieze and cornice above. It could be carried out in mahogany, with a few inlaid lines or in dark walnut, with a touch of the carving tool here and there; or in oak, perfectly plain. Perhaps it may serve all readers alike if we describe a mahogany overmantel with simple band and string inlays.

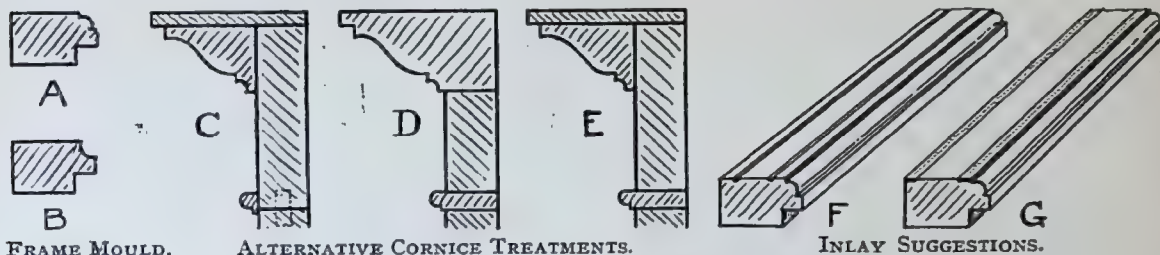
The mirror frame—going by the size sketched—is 3 ft. 6 ins. long by 2 ft. high. It should be 2 ins. wide and $1\frac{1}{8}$ in. or $1\frac{1}{2}$ in. thick, with a bead on the inner edge, as A, or a hollowed lip, as B. The sight size of the mirror will thus be 3 ft. 2 ins. by 1 ft. 8 ins.—say, 3 ft. $2\frac{1}{2}$ ins. by 1 ft. $8\frac{1}{2}$ ins., actual rebate size.

The base is 4 ft. 6 ins. long, $2\frac{1}{4}$ ins. wide and

2 ins. high. It may be in one piece, the moulding being returned at the ends with the chisel, or the plinth ($2\frac{1}{2}$ ins. wide, by 1 in. thick) may be a separate piece. The base is screwed from

brackets may have thin lines as indicated, these following the shape about $\frac{1}{2}$ in. from the edge.

If walnut is preferred to oak or mahogany, a moulding of a less plain character may be used



below to the frame, thumb slots being provided if the whole base is solid.

The side brackets are 15 ins. in length, $4\frac{1}{2}$ ins. wide and may be $\frac{7}{8}$ in. thick. They must be neatly shaped, the width at the upper part being 1 in. They are set back about 3-16 in. or $\frac{1}{4}$ in. from face of frame, and are dowelled to the frame and screwed to the base from below.

The frieze moulding is $\frac{1}{2}$ in., the frieze shows $2\frac{1}{2}$ ins. in width, and the cornice is 2 ins. high. The cornice should have a projection (from face of frieze) of $2\frac{1}{2}$ ins., and will thus be about $3\frac{3}{4}$ ins. wide over all.

The frieze and cornice may be built up as C or as D. In the former case the frieze proper will have a total width of $4\frac{1}{8}$ ins., being well dowelled to frame. The frieze and cornice moulds will be planted on, being mitred at the corners, and a board ($3\frac{3}{4}$ ins. wide by $\frac{3}{8}$ in. thick) put on above to form the top member. At D the frieze moulding and cornice are both solid. In this case the cornice and frieze will be screwed together. The frieze moulding may be screwed to the mirror frame and the frieze then dowelled on. As a third alternative the section at E might be adopted, the cornice here being treated as C and the frieze mould as D. If either or both cornice and frieze mould are made in the solid, the moulding must be returned at the ends with the chisel.

The mirror is framed in the usual way, with a thin over all backing.

Thus far the work is the same, whether mahogany, walnut or oak is the wood used, and in the case of oak the overmantel may be regarded as complete, except for the fumed or other dull finish it should have.

If mahogany has been selected inlaid lines may be run as follows:—The mirror frame may have two narrow box or satinwood lines run in about $\frac{1}{4}$ in. from each side, as F; or, instead, two bands (5-16 in. or $\frac{3}{8}$ in. wide) may be inlaid close up to each side of the flat part, as G. The frieze may be treated in the same way; panels, as shown, should be formed if narrow lines are used, but if the wider bands are inlaid close up to the edge, the worker may be content to dispense with panelling. He might, however, add a small oblong-oval patera in the centre. The

for the mirror frame. The frieze might be increased to 3 ins. in width and panels formed by narrow moulds mitred and planted on. On the brackets sunk panels could be worked, or some simple carving introduced.

The design is of course a suggestion, not necessarily intended for close following but rather in the way of assistance to readers who may occasionally receive commissions for such a piece of work. The main feature is a framed mirror, around which the rest is built, and by adopting this simple, yet effective, idea, it is easy to turn out a permanently useful article of furniture.

Forthcoming Exhibitions.

March 13.—Trentham Home Arts and Industries Exhibition, to be held at Trentham Institute Secretaries, Messrs. W. H. and H. W. Stevens, Hanford.

March 25 and 26.—Exhibition in connection with Easter Conference of National Association of Manual Training Teachers, to be held at the London Day Training College, Southampton Row, W.C. Chairman of Exhibition Committee, Mr. A. C. Horth, 38, Foyle Road, Blackheath, London, S.E.

May 28 and 29.—Essex Handicrafts Association Exhibition, to be held at Winter Gardens, Clacton-on-Sea. Joint Secretaries, Miss Edith Newman and Miss Hilda Ackers, Bank Chambers, Clacton-on-Sea.

We regret that the Carlton Arts and Crafts Exhibition, held from January 17th to 24th, was by error announced here for February 1st to 7th.

Victoria and Albert Museum.

A gap in the historical sequence of English panelled interiors has been filled by the presentation of a panelled room of about 1730 removed from No. 26, Hatton Garden. The panelling is of pine, with elaborately carved mantelpiece, doorways and recesses.

Decorative Art.

During January a series of interesting lectures on "Five Centuries of Decorative Art" was delivered at the Victoria and Albert Museum by Mr. S. C. Kaines Smith, M.A. At the British Museum the same lecturer dealt with "Greek Art and National Life."

Recent Books on Arts, Crafts, &c.

Rosettes.

"SELECTION OF TWENTY-FOUR ROSETTES," being illustrations from ancient Roman fragments, after engravings by Carlo Antonini. 10 ins. by 7½ ins., 24 plates, 2s. 6d. net; or, printed separately on cards and supplied in envelope, 3s. 6d. net. (J. Tiranti and Co., 13, Maple Street, Tottenham Court Road, London, W.)

Messrs. Tiranti announce that they have in contemplation the publication of the works of the well-known eighteenth century Italian engraver, Carlo Antonini. The first instalment is the reproduction of a series of rosettes from ancient relief ornaments, originally published in 1781, and it will be interesting to quote a few extracts from the author's preface, written more than a hundred and thirty years ago:—

"To the lovers of Fine Arts.—The ablest and most industrious artists of antiquity used to consult Nature's works, not only in reproducing Gods and men and animals, but also plants and flowers, where-with they adorned their architectural buildings, convinced that such ornaments were apt to delight the human senses, through the elegant variety of their forms. This imitation of Nature, coupled with artistic simplicity, has met at all times with the approval of wise professors and attracted the admiration of the public at large, in spite of the caprice of some, who, with grave prejudice to the art, went astray, introducing new styles which altered the beautiful simplicity of architecture. But these capricious ornaments lacking the æsthetic never met the approval of classic artists.

"To avoid this, and call back the really good taste in the decorative art the best thing to do is to return to the most noble works according to the manners of the ancients. To this end I have collected these selected flowers or rosettes as we find them on the old Roman monuments as well as in other buildings raised during the classic times of the Roman Empire; and have used all possible skill in drawing and reproducing them, that they might show that grace and fineness that appears in the original."

The twenty-four illustrations, full-page, are produced without accompanying letterpress. The series on cards will be particularly useful, especially to wood-carvers or modellers, who make use of them for copying. The examples are well reproduced in line from a fine copy of the original work, and in each case a working section is given. Wood-carvers and sculptors should find the series of great help, the illustrations being as good as plaster casts from which to copy, and designers, engravers, metal-workers and jewellery-makers should also find them of value. In size the examples are adequate for all purposes, and each rosette is capable of modification or adaptation. Messrs. Tiranti have done a real service to the craftsman in reproducing these fine old fragments, and we have no doubt that their publication will be widely appreciated. Art and handicraft teachers should make a point of seeing the volume, or—better still—should secure a copy of the portfolio series.

For the Would-be Handicraft Teacher.

We are constantly receiving letters from readers and others asking for information regarding the various

steps to be taken in order to qualify for a teacher of handicraft. For this reason we welcome a little two-penny pamphlet which has just reached us, entitled "From Artisan to Handicraft Teacher," designed to give information as to the necessary preparation. The pamphlet may be had (2½d., post free) from Mr. J. W. Marriott, 10, Grange Road, Chester.

"The Studio."

In the December *Studio* appears a very interesting series of full-page photographic reproductions of the garden and terraces at Sir William Lever's residence, The Hill, Hampstead Heath. These include the exterior of the Lounge, the Lily Basin, the Pergola, the Arbour, &c. The photographs, taken by Mr. H. N. King, are beautifully printed. Another feature of interest in the December number is a review of the "Deutscher Werkbund" Arts and Crafts Exhibition, held at the fine Austrian Museum in Vienna. Illustrations of many of the exhibits are given.

Railway Information for Boys.

"THE WONDER BOOK OF RAILWAYS." Edited by Harry Golding. 4to., twelve coloured plates, and nearly 350 other illustrations. 3s. 6d. (Ward Lock and Co., Ltd., Salisbury Square, London, E.C.)

Of the many railway books which have appeared during recent years this is one of the most suitable for young boys who do not wish to be deluged with too much of what is technical. It is brightly written, giving just the amount of information that a boy of from nine to twelve can grasp, and with a series of instructive illustrations which, in themselves, are of some educational value. The full page coloured plates are finely reproduced, and lend additional value to a volume which is excellent all round. Practically all the illustrations are from photographs.

EDITORIAL NOTICES.

Contributions.—The Editor invites correspondence and original contributions on all subjects relating to woodwork and other handicrafts. All MSS. should be accompanied by a stamped and addressed envelope for return if unsuitable.

Books for Review, price lists, tools materials, etc., sent for inspection, enquiries and all correspondence relating to the literary portion of the Magazine should be addressed to the Editor.

Editorial Address: "The Woodworker and Art Craftsman," 57, Farringdon Road, London, E.C.

ADVERTISEMENTS.

Advertisement Rates.—These may be had on application to the Advertisement Manager. All correspondence relating to Advertisements to be addressed to THE ADVERTISEMENT MANAGER, "The Woodworker and Art Craftsman," 57, Farringdon Road, London, E.C.

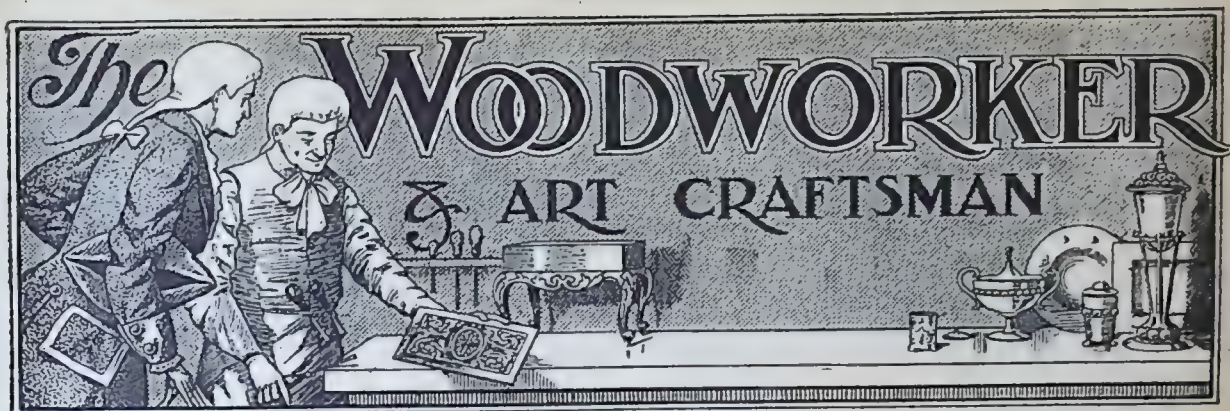
PUBLISHING NOTICES.

Subscriptions.—"The Woodworker and Art Craftsman," with Design Supplement, will be sent post free to any address in the Postal Union for 4s. per annum, payable in advance. Remittances should be made by postal order and addressed to the Publishers.

Designs.—"The Woodworker and Art Craftsman" Design Supplements may be had FREE with the current number of the Magazine for one month only. They are not given away with back numbers, but may be had separately, price Sixpence each.

Publishing Correspondence relating to sales of the Magazine, subscriptions, etc., to be addressed to the Publishers, "Woodworker and Art Craftsman," 93, Long Acre London, W.C.

See *Home Handicrafts* (One Penny) for January for article on "How to Build a Doll's House."



VOL. XVII. No. 231.

MARCH, 1913.

DESIGN FOR THE MONTH.

Panels for Woodcarving and Inlaying.

Suitable for Cabinet-Bookcase.

ON our Supplement for this month we give the full sized designs for two vertical panels, one for woodcarving, the other for inlaying. With these are also given smaller fill-in panels to match. The panels have been designed to suit the doors of a handsome cabinet-bookcase—carved or inlaid as preferred—illustrated on pages 50 and 51, but obviously they may be utilised in many other ways, and both patterns are suitable for adaptation.

The sizes of the panels given on the Supplement are $21\frac{1}{2}$ ins. by 5 ins. This, it must be remembered, is the size of the ornamental design only, and the actual panel will be approximately an inch more at each side. Thus the wood for the carving design will have to be cut to $23\frac{1}{2}$ ins. by 7 ins. In the case of the inlaid panel the over all size will depend on whether the worker intends to use veneers or to inlay in the solid. The same remarks apply to the smaller designs; the carved one, shown as 5 ins. square, will require a piece of wood 7 ins. by 7 ins. to allow for an adequate margin.

For the carved panels wood of $\frac{3}{4}$ in. thickness



CARVED PANEL,
 $23\frac{1}{2}$ INS. BY 7 INS.



INLAI D PANEL,
 $23\frac{1}{2}$ INS. BY 7 INS.



CARVED PANEL,
7 INS. BY 7 INS.



INLAI D PANEL,
6 INS. BY 7 INS.

will be required. If the full sized section on design sheet is referred to it will be seen that the panel is a raised one—that is, there is a bevelled "field" all round. This gives a more effective result when the panel—as intended—decorates some piece of furniture. The field margin will be polished with the rest of the piece, but the carved portion will be left dull.

The ground may be taken down about $\frac{3}{8}$ in.

There is nothing about the carving design to call for special mention. The style is familiar to those who have studied woodcarving, and what are chiefly wanted are spirit and feeling in modelling. The same design could, if desired, be used for inlaying, but great care would have to be taken in the selection of woods—strong colours being avoided—and some delicate sand-shading would be required.

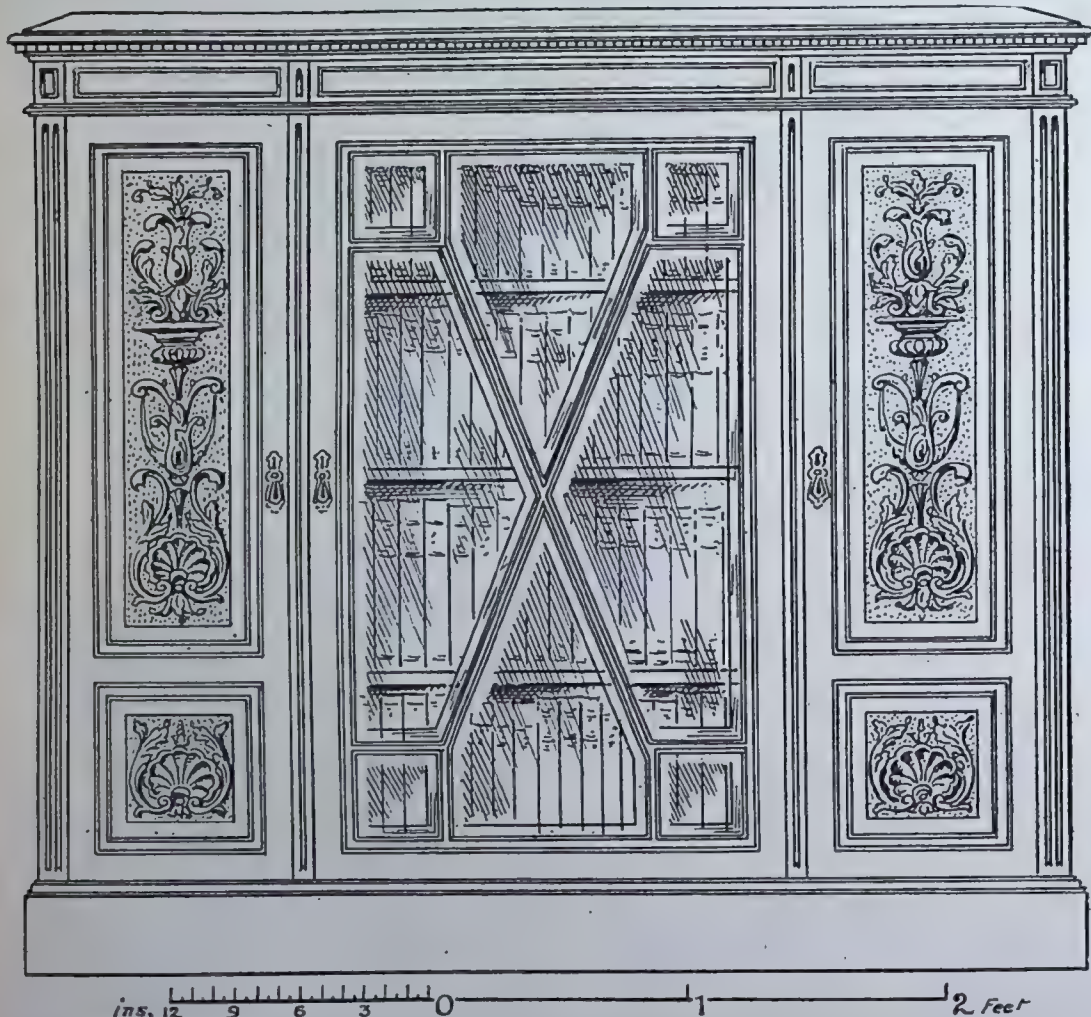


FIG. 1.—CABINET-BOOKCASE, SIZE 4FT. 2½INS. OVER TOP, BY 3FT. 8½INS. HIGH, WITH TWO CARVED PANEL DOORS.

This will allow ample for relief; but if the carver wanted a bolder effect he could take wood of $\frac{7}{8}$ in. or 1 in. and keep the highest points of the ornament about $\frac{1}{2}$ in. or $\frac{5}{8}$ in. in relief. For the cabinet-bookcase illustrated, however, a very bold effect is not wanted. The field dips about $\frac{1}{8}$ in. from the panel proper, and should have a gentle bevel. If the field is 1 in. wide, this will allow about $\frac{1}{4}$ in. all round for the rebate of the door.

The inlaid panel is the same size as the carved one. If used for a door (or for any upright decoration) a margin of about an inch all round will be wanted, and the double border line shown on the Supplement diagram indicates a box or satinwood line, thus providing the enclosure required. The pattern is not one that lends itself to much variety of colour. If mahogany, polished to a Sheraton shade, is the ground wood, the flowers may be yellow (not too startling), the leaf

forms green and the stems a light brown. This is merely a general suggestion, and other combinations might look equally well. What has to be guarded against is the use of strong whites for the flower parts, which would produce a disagreeably spotty effect.

The inlay may be worked with the usual marquetry veneers. Readers who may be expert fretcutters, but who are not accustomed to

tion, and it will be sufficient for practical purposes if we deal with Fig. 1. This piece of furniture represents a three-door bookcase, the centre door being barred and glazed whilst the two narrow side ones are panelled and carved. The width over the carcass is 4 feet; the depth is 11 ins. and the total height 3 ft. 8½ ins. The depth over the top is 13½ ins. The end pilasters are 1½ in. wide, the central ones 1 in. wide.

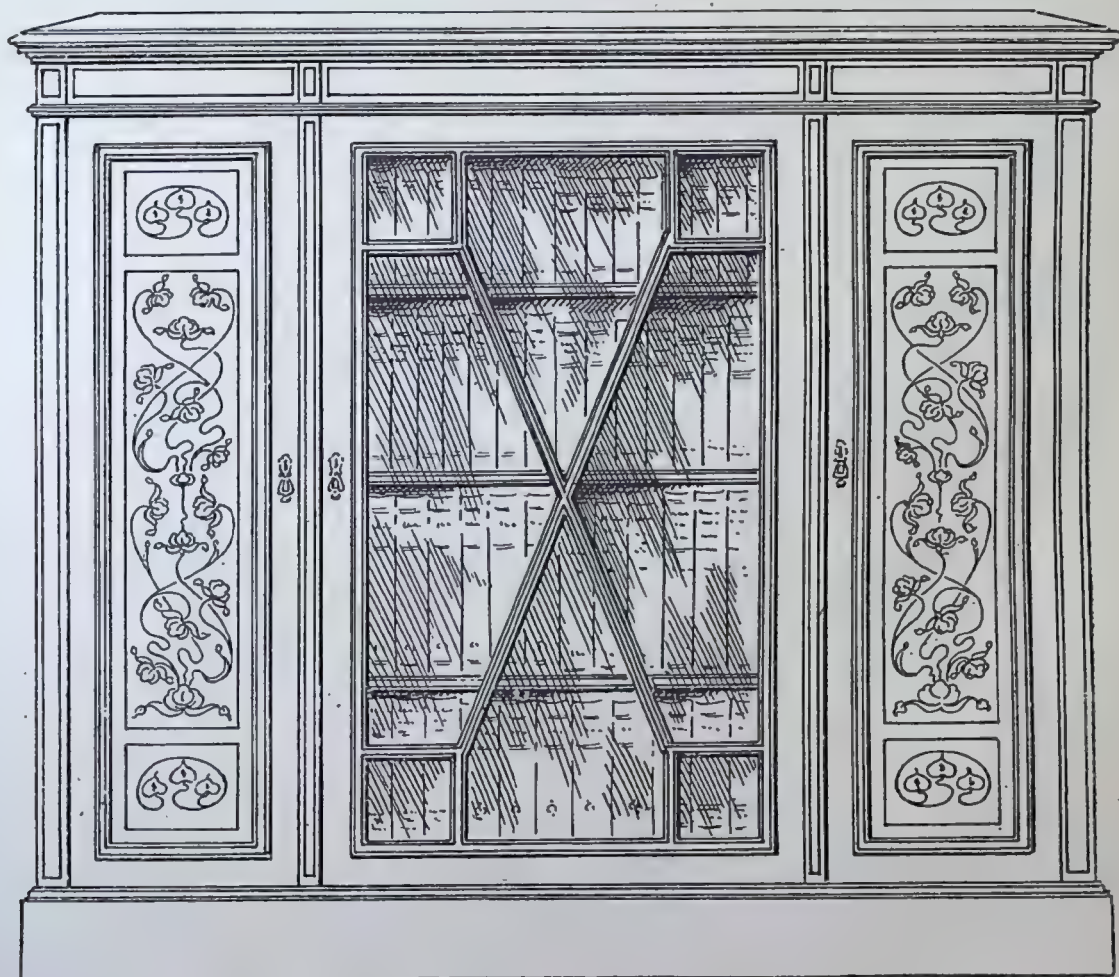


FIG. 2.—CABINET-BOOKCASE, WITH TWO INLAID PANEL-DOORS.

handle veneers, may work in the solid—1-16 in. or ⅛ in. boards being used, and the finished inlay then mounted on a solid backing. An inlaid panel will not have a bevelled field at the side, but will be flat between the mouldings of the door. The box or satin border is, however, essential. The smaller inlaid panels are simple, but placed as shown in Fig. 2 they are very effective.

We now come to the use of the panels in connection with the cabinet-bookcases illustrated. Both are similar in general outline and construc-

The doors are exactly 3 feet high, the side ones being 10½ ins. wide and the centre one 1 ft. 10 ins. wide. All necessary sizes are given on the plan (Fig. 3) and end elevation (Fig. 8).

The top shows 1½ in. thick in all. This is made up of the actual top 4 ft. 2½ ins. by 13½ ins. and ⅝ in. thick (see A, Fig. 4). At the back the top overlaps 1½ in. so as to go close against the wall. To make up the 1½ in. thickness a bed mould (¾ in.) is mitred and screwed on from underneath. This is shown in the section, Fig. 4, B. The square

member may be dentilled. This will be an improvement on the bookcase whether carved or inlaid, but it is particularly recommended in the former case. The bed mould will be rebated to take the frieze (C).

This frieze shows a daylight width of 2 ins., but must be cut to about $2\frac{3}{4}$ ins. to allow for rebating to the bed mould and also to allow for a $\frac{1}{2}$ in. neck moulding planted on below. This

pieces at the parts mentioned (Fig. 4, D), but the whole frieze (C) must in this case be set back 3-16 in. so that the faces of return parts (D) and pilasters (F) are flush. The frieze may be left plain, or panels may be sunk as indicated. In any case small panels should be sunk in the planted-on parts above the pilasters and divisions.

The ends ($\frac{3}{4}$ in. thick) are rebated to take the back framing. They are housed to the pilasters

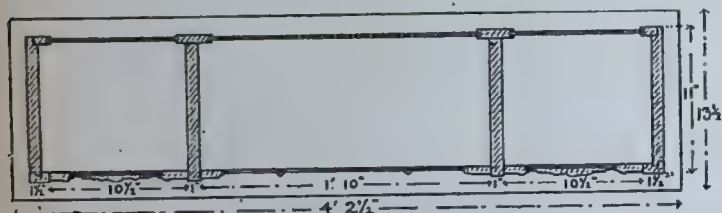


FIG. 3.—SECTIONAL PLAN OF CABINET BOOKCASE.

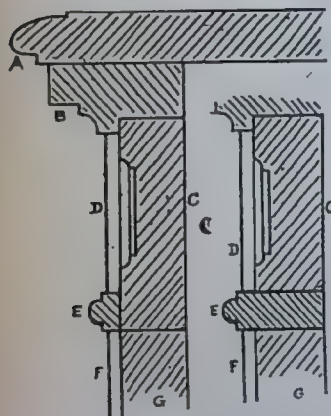


FIG. 4.—SECTION OF TOP AND FRIEZE.

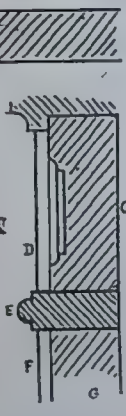


FIG. 5.—ALTERNATIVE SECTION.

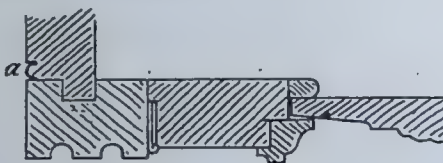


FIG. 6.—SECTION OF PILASTER AND CUPBOARD DOOR.

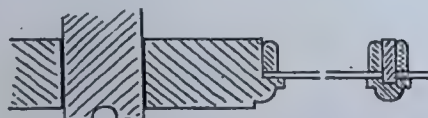


FIG. 7.—SECTION OF MIDDLE DIVISION AND GLAZED DOOR.

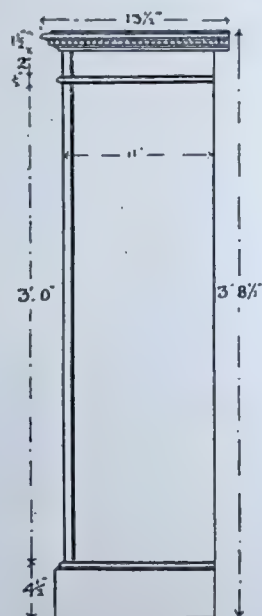


FIG. 8.—END VIEW OF CABINET BOOKCASE.

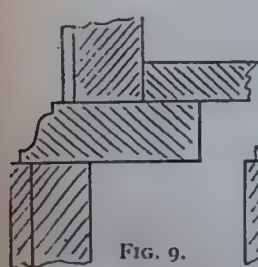


FIG. 9.

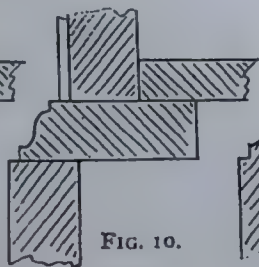


FIG. 10.

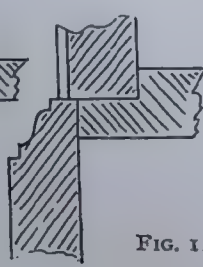


FIG. 11.

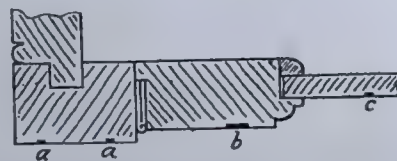


FIG. 12.—SECTION OF PILASTER, DOOR AND PANEL OF INLAID BOOKCASE. *a a*, BOX OR SATINWOOD LINES; *b*, INLAID BAND; *c*, BOX OR SATINWOOD LINE.

ALTERNATIVE SECTIONS FOR PLINTH.

necking will be returned at the ends. An alternative plan is to have a bottom front rail for the frieze (Fig. 5), with the moulding (E) run in the solid. If this method is adopted the two middle divisions will have to be notched back to take the rail. A neck moulding to correspond with solid mould of rail will be planted on the ends.

It will be noticed from the sketch (Fig. 1) that the frieze is broken by returns above the end pilasters and the middle divisions. To indicate these returns the frieze may be faced with 3-16 in.

(also $\frac{3}{4}$ in. thick), and a bead as shown at *a*, Fig. 6, is run on the front edge of ends to break the joint. The two middle divisions may be 1 in. thick. On their face a single flute is carved. Two flutes are run in each of the end pilasters.

The cupboard doors, 3 ft. by 10 $\frac{1}{2}$ ins., are framed with stiles and rails 1 $\frac{3}{4}$ in. by $\frac{7}{8}$ in. A moulding planted on as at Fig. 6, will increase the width to 2 ins. The lower panel is square, with a rail showing 1 $\frac{1}{4}$ ins. wide between it and the upper panel. Thus the daylight openings for carved

panels will be found to come out at $22\frac{1}{2}$ ins. by $6\frac{1}{2}$ ins. and $6\frac{1}{2}$ ins. square respectively (rebate size $23\frac{1}{4}$ ins. by 7 ins. and 7 ins. square respectively). The cupboard doors are hinged to the pilasters.

The middle glazed door may have $1\frac{1}{2}$ in. framing with bars of the section as at Fig. 7. This door is hinged to the right hand centre partition. In Fig. 1 the glass panels in door are shown as bevelled. This is an expense which it may be worth incurring if the cabinet-bookcase is being made up as a specially fine show piece, or if the central portion is to be used as a display case, but otherwise plain glass will do.

For the back, the most workmanlike job is framing in large panels. If this is done the framing may be of $\frac{3}{4}$ in. stuff and the panels 5-16 in. Instead of framing the back may simply be match-boarded with V joints.

The plinth may be of solid hardwood; or it may be made up of $\frac{3}{4}$ in. pine, dovetailed at corners, well glue-blocked, and then faced up with $\frac{1}{4}$ in. stuff (Fig. 9) to match the rest of the woodwork. In this case the rail with moulded edge may be $2\frac{1}{2}$ ins. wide and $\frac{3}{4}$ in. thick, mitred at the corners, the bottom of bookcase being $\frac{1}{2}$ in. At Figs. 10 and 11 alternative sections for a plinth of solid hardwood are shown.

Turning now to the inlaid cabinet-bookcase (Fig. 2), the construction here is similar to what we have described, and the differences lie almost wholly in the decoration. Instead of flutes on the pilasters and middle divisions, panels of narrow box or satinwood lines may be formed. (See also *a a*, Fig. 12.) Similar panels are made on the frieze, as indicated. Inlaid patterns may be put in the square panels above the pilasters and divisions if desired. The door mouldings of the cupboard portions may be simplified, as suggested at Fig. 12, and $\frac{1}{4}$ in. bandings inlaid (*b*) to form panels. This should also be done in the case of the centre door. The long side door panels are each divided into three by means of satinwood or box lines (Fig. 12, *c*). The longer panels come out at $21\frac{1}{4}$ ins. by 5 ins. and the shorter ones at 4 ins. by 5 ins.—the size shown full size on the Supplement.

The bookcase part should have three $\frac{3}{4}$ in. movable shelves. The cupboard portion may be fitted with fixed or movable shelves as desired.

The inlaid bookcase is suitable for carrying out in mahogany, polished to a Sheraton colour. The carved one may be worked in walnut, oak or mahogany.

On page 74 will be found a suggestion for using these carved and inlaid panels for making a hanging cupboard. Two alternative suggestions are given.

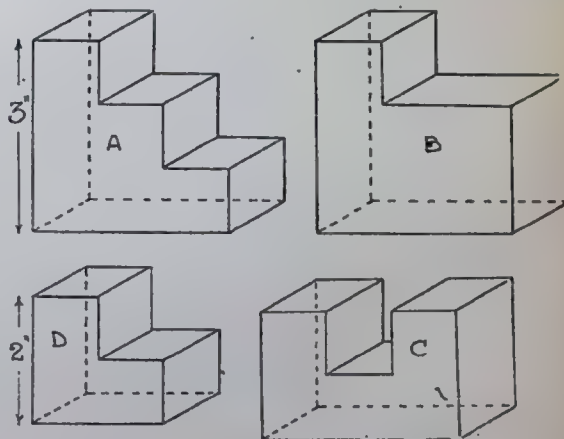
Note.—THE WOODWORKER AND ART CRAFTSMAN design Supplements may be had free with the current number of the magazine for one month only. They are not given away with back numbers, but may be had separately, price sixpence each.

Plaited Leather Chains.

This is really the revival of an old handicraft. In making leather chains nowadays, soft dyed suede is employed instead of dyed leather, the strips of suede being so narrow that three abreast would hardly equal bébé ribbon in width. These are plaited so as to form a perfectly flat chain, four, five, or even seven being used, while the chain may consist of a number of short lengths, as many as nine or ten being necessary to make it long enough to pass round the neck and reach far enough to enable the watch or purse which it carries to be tucked into the belt. Fancy plaiting has no difficulties for those who have got beyond the preliminary stage of interweaving three strands. The only difficulty as regards the chain lies, however, in finishing off the ends and joining each strip together. In the case of many people the answer to the problem lies in sending the woven strips to a leather-worker and having the matter settled professionally, a neat brass clasp and link between each being eminently satisfactory, while a swivel in the centre provides anchorage for watch or purse. When the article is purely and entirely home-made the question is not so easily solved, but with the aid of small buckles such as are sold for ornamental purposes and for shoes a strong chain can easily be made. Each plait, whenever finished, must be attached to its buckle, the loose ends being temporarily secured by a twist of strong cotton and then doubled over, when, by means of a needle and strong cotton matching the suede exactly, the latter can be made perfectly firm, while any jeweller will provide a firm swivel or ring for the last link.

Block or Cube Puzzle.

Here is a good little puzzle which will test the accuracy of your planing, sawing and paring. Make



WOODWORKER'S CUBE PUZZLE.

one piece like A; one piece like B; one piece like C; and three pieces like D. The puzzle is to put the six pieces together so as to form a cube. All the measurements are one, two, and three inches respectively. The pieces should be made of hardwood such as birch, beech or mahogany. Two different solutions are possible.

Simple Forms of Wood Carving.

BY HERBERT TURNER.

WE give here four illustrations of the kind of simple work that can be attempted with only one carving tool—the V-tool.

These are given as types only, and readers will doubtless be able to adapt the designs to suit any particular object they may wish to carve.

design can always be enlarged or diminished to the size required.

Fig. 4 is useful as a border for picture frames, corner cupboard uprights, the stiles and rails of doors, edges of shelves, and other similar positions.

The only cutting tool required for executing these designs is a V-tool. The name is self-explanatory, the tool cutting a hole of V-shaped section. It is at the first a somewhat difficult tool to use; but if the beginner takes a few pieces

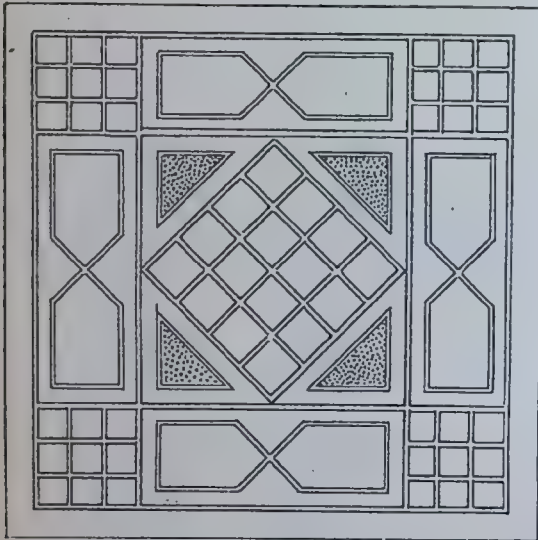


FIG. 1.—SUGGESTED DESIGN FOR STOOL TOP, TEA-POT STAND, ETC.; OR (WITH CENTRE PANEL OMITTED) FOR PHOTOGRAPH FRAME.

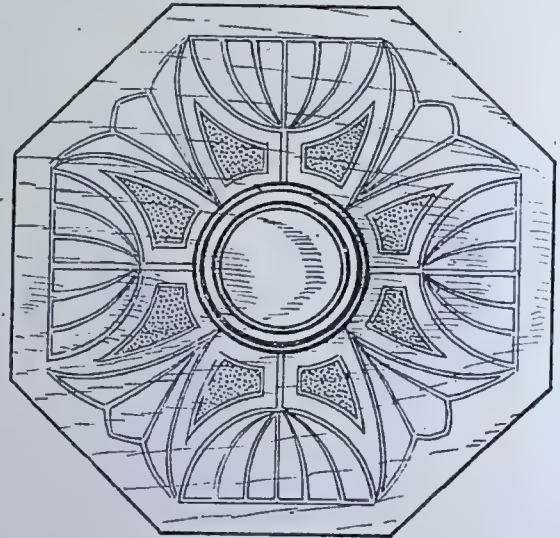


FIG. 2.—SUGGESTED DESIGN FOR STOOL TOP. SUITABLE ALSO FOR PLANT STAND OR TEA-POT STAND.

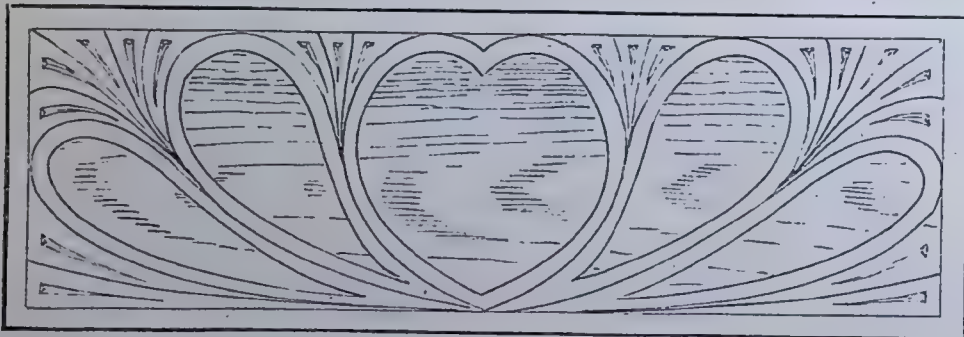


FIG. 3.—DESIGN FOR HORIZONTAL PANEL, SUITABLE FOR VARIOUS ARTICLES OF FURNITURE.

Fig. 1 will form a suitable design for a stool top, panel, teapot stand, or for a picture frame or photograph stand by cutting out the centre square.

Fig. 2 is obviously suited to a stool top. It might be enlarged to take a mirror or picture, and it will also be suitable for a plant stand or teapot stand.

Fig. 3 is a panel to be used horizontally, and will do for a variety of objects, such as: Hat rail, key rack, chair rail (or rail for any framing), door panel, box front or top, seat for settle, &c. The

of spare wood (yellow pine for preference), and practises cutting lines on it, both straight and curved, he will soon master it; and then, once having done this, it is quite certain that no other carving tool will have any terrors for him. The V-tool should be 5-16 in. in size; that is, each flange is 5-16 in wide. There are three angles at which these flanges are set; choose the middle one, which is rather less than a right angle.

A punch is needed for the punched surfaces, and a nail point will do what is required.

Hold the V-tool firmly in the right hand; then

grasp the blade with the left. Hold the tool so that each flange makes an equal angle with the board, looking at the tool end ways, and place the point of the tool on the line. It may here be said that only one line is needed in designs for the V-tool; the tool itself makes its own outlines.

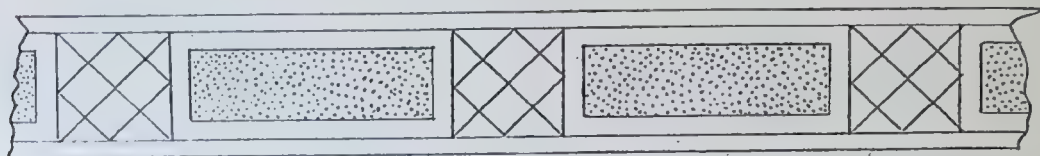


FIG. 4.—SUGGESTED DESIGN FOR BORDER, SUITABLE FOR DOORS, PICTURE FRAMES, ETC.

Take the lines across the grain first; then the lines with the grain. Begin to carve about an eighth of an inch away from the end of a line so that the back of the tool does not make too great a mark outside the design. Finish this uncarved portion from the other end. Take great care to get all the tool cuts the same depth and the same width, and pay special attention to the angles that they are cleanly finished off. The intersections of the crossed lines afford a ready test of uniform depth of cutting, and attention should be paid to this.

All the lines on Figs. 1 and 4 are straight lines, but on Figs. 2 and 3 curved lines are introduced. If lines are only slightly curved, they are perhaps easier to do than straight lines; but when they form parts of very small circles, as those in the centre of Fig. 2, they may prove more awkward. All the advice that can be given is to practise until sufficient proficiency is attained.

The curves on Fig. 3 are long and slight, and so will not be at all difficult to do. The smaller decorative line between some of the outlines is a graduated cut; that is, it varies in depth from start to finish evenly. All the other lines should be of the same depth. Fig. 4 is like Fig. 1, and the remarks already made will apply in this case.

The V-tool is probably the most useful of all carving tools, and many exceedingly good effects can be obtained by it alone. Later on a few designs and suggestions may be given showing how the V-tool can be used in a more extended way than illustrated here.

Veneering and Marquetry.

A knowledge of the more general methods of veneering work is of great value to the woodworker. *THE WOODWORKER SIXPENNY HANDBOOK*, "Veneering, Marquetry and Inlay," by Percy A. Wells, gives full instructions for cutting, laying and jointing veneers, for the treatment of curved work, for cross banding, stringing, etc. Inlaying with veneers is dealt with, and there is a chapter on metal, pearl and wax inlaying and others on parquetry, intarsia and marquetry. The handbook is one of about 80 pages. There are 37 illustrations, and a study of the little volume will do much towards leading the craftsman into new and interesting avenues of work. Price sixpence, or post free for sevenpence, from *THE WOODWORKER AND ART CRAFTSMAN*, 57, Farringdon Road, London, E.C.

Tinning a Soldering Iron.

Clean the iron by rubbing it with an old file or sandpaper. As soon as a bright surface has been obtained, heat the "bit" until just hot enough to melt solder. Directly the tool is so heated, a film of oxide will be formed upon the surface, and that must

be removed *before* the solder will adhere. To remove the oxide, and at the same time coat the bit with tin, procure a block of soft freestone, place upon it some resin, melt it down, and then melt some solder with the resin. Rub the soldering iron backward and forward through the molten resin and solder. The stone will polish the tool, the resin will flux the bright surface, and the solder will adhere to the tool, giving it the coat of tin necessary. Acid should never be used when tinning a tool; resin will answer every purpose. Sal ammoniac may be used, as that substance is the natural flux for copper.

A Jacobean Armchair.

This is a very beautiful chair, made about the middle of the seventeenth century. The carving on the back, though naive in treatment, is so fresh and spontaneous that the effect is delightful. The pediment-shaped



A FINE JACOBEOAN ARMCHAIR.

upper rail breaks the rectangular framing in a very happy way, and though the elements composing the design are simple in the extreme the result has an appearance at once rich and restrained. The ornament has suffered surprisingly little from a usage of nearly three centuries, but the joints have had to be strengthened with plates. The wood of course is oak.

Repoussé Work.

By K. COOKSON.

A Lock Plate.

PERHAPS some readers may express surprise at our giving another finger plate design in this series. But, after all, in even a small house there are many doors, and as each door requires two plates a large number are required.

The plate here illustrated differs from those previously given in that it surrounds the handle as well as the woodwork above and below. This has a very handsome effect, besides being advantageous in the case of doors which are frequently used. Nicely worked copper is not seriously affected by handling, and a rub with a duster brings it back to

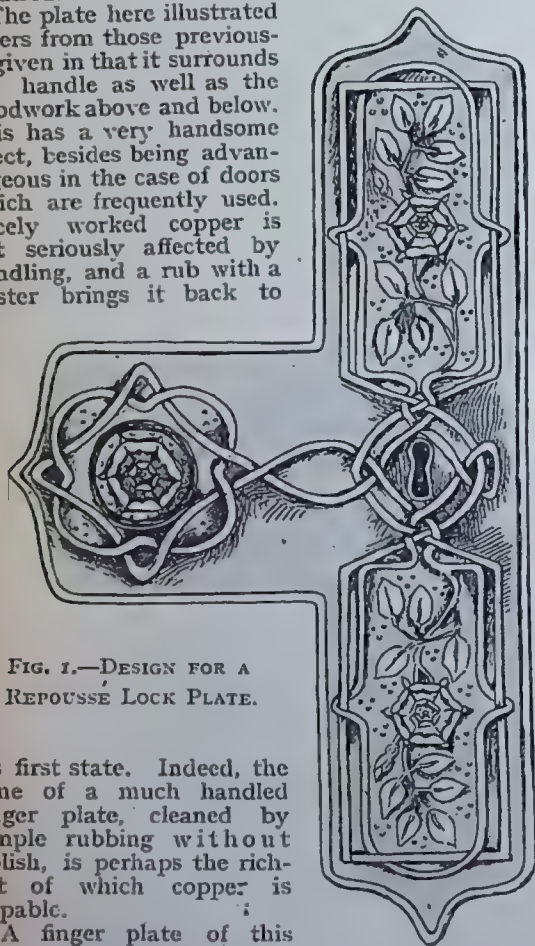


FIG. 1.—DESIGN FOR A REPOUSSE LOCK PLATE.

its first state. Indeed, the tone of a much handled finger plate, cleaned by simple rubbing without polish, is perhaps the richest of which copper is capable.

A finger plate of this kind, however, is less convenient to work, and in case of a removal to another house it is rare to find the handle in exactly the spot to fit into the hole arranged for it. Door handles, moreover, are seldom of a type admired by art metal workers.

We will suppose that the door which is to be fitted with this lock plate has a tawdry brass or staring white china knob. Clearly the addition of handworked copper to such fittings would be hopelessly incongruous. Artistic handles are, of course, to be purchased ready made, but they are expensive. It is, however, quite easy to

unscrew the ugly handle and get a woodworker to turn, out of mahogany or oak, handles with a flat top, rebated to take a round plaque of repoussé work to correspond with the character of the other design. Oak should be stained or fumed; mahogany may be left its natural colour. They should not be varnished or polished, but given a few good rubbings with beeswax. There is a considerable amount of pressure on the top of the handle, so it is as well before fastening the metal ornamentation on to fill the raised parts with a mixture of pitch and plaster-of-paris.

If the hole in a door is not in the right place, this can often be overcome by making a separate "rose" of thin copper, treating it ornamentally. This can be moved to right or left, up or down, as desired, thus covering the former hole. In case of a keyhole a kind of ornamental escutcheon must be made of sufficient size to cover the former hole.

It is impossible to give here the exact cutting dimensions of the metal for the plate, because the proportions of nearly all doors vary slightly; the effect is certainly better if the plate comes well up to the edge of the framing. The metal may be cut on the straight with shears, the fretsaw being used for the keyhole and spindle; but the richest appearance is obtained by raising a heavy line all round from the back and then working from the front with a flat tracer, to get an almost undercut effect, finally using a cutting chisel (worked on the slant) to cut the metal. This gives a very handsome rounded edge in keeping with the somewhat massive effect of the large expanse of metal. A cutting chisel can easily be made by sharpening a tracer on a stone to a sharp edge. It is driven along in the same way as an ordinary tool. The metal cuts quite easily, as the track has been prepared by the previous working of the undercutting line. A little filing is necessary to get a nice smooth finish.

The design chosen embodies the ever-popular briar rose. Owing to its arrangement in panels it can easily be varied to suit doors of different proportions. If preferred, it could be carried out on separate panels for the ordinary small finger plates. The general scheme is that of interlacing lines, vaguely reminiscent of the entwining stems of the roadside briar. In two places they widen out to enclose spaces filled by leafage and a blossom. No attempt at a naturalistic treatment of these stems should be made. They must be treated as flat or tape-like strands, except on the inner of the two lines surrounding each panel, which may have a rough surface and be rounder. The whole effect, however, should be somewhat flat, the highest relief being the upstanding petals round the centre of the flowers and the curling edges of the outer petals. The ground within the panels should be planished down and marked here and there from the back, with groups of three punch marks. The triangular spaces at the top and bottom of the panel and the reserves for the

key and spindle hole should also be planished down. This planishing may be done on a level or other hard ground. As the object is not so much to deepen the background as to get a



FIG. 2.—TOP OF HANDLE
(enlarged.)

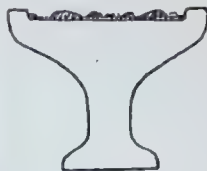


FIG. 3.—SECTION
(reduced size)
OF HANDLE.

pleasantly diversified surface care must be taken not to get the lines too thin and wiry.

When finished the work must be thoroughly cleaned, and darkened by a few minutes in a bath of dilute sulphuret of ammonia. Do not rub up the lights. The effect will be better with an all-over bronzing; gleams of bright copper will appear with wear. It should be affixed to the door with small brass screws or escutcheon pins.

The Use of Carbon Paper for Tracing Designs.

CARBON paper, as most know, is simply a sheet of paper coated with a preparation of grease and colour, so that when any hard substance is drawn across it a mark is left on whatever happens to be underneath. These tracing papers may be had in black, blue or red. Black is usually preferred—chiefly on account of its leaving a stronger mark on the wood.

A new sheet of carbon paper is obviously blacker and more greasy than one which has been in use for some time. It consequently gives a stronger impression. For this reason it is advisable to use a new sheet for dark woods, such as walnut or padouk, and a worn sheet for white or delicately-coloured woods. On a dark wood a worn sheet will leave an indistinct line which it is difficult to follow; while if a new sheet is used for white holly or maple it may soil the surface to a degree that will afterwards necessitate laborious sandpapering.

When the design is arranged on the wood it must be seen that the carbon paper is below every part of the diagram that has to be traced. It is idle to suppose that the worker can hold the design on the wood while he traces the outline; he must fasten it down at the corners with pins, tacks, or—better still—regular drawing-pins. If the design should happen to slip when the work is half done it will puzzle the operator to know how to get it exactly in its right place again. During the preliminary preparations care must be taken not to rub the hand roughly over the design

as this will leave a mark on the wood; such care is particularly necessary when the carbon paper is new and greasy.

It is usually said that tracing may be done with an agate stylo, a sharp-pointed stick, or a pencil. Tastes always differ, but the writer prefers a pencil. An agate stylo has rarely a sharp enough point. If a "stick" is used, a hardwood penholder sharpened to a fine point is the best weapon; any soft wood is useless. The advantage of a pencil is that we all know how to hold and use it. The lead should be hard (say an H or HH) and must be kept with a sharp point. If the worker keeps a small bit of fine glasspaper beside him and periodically rubs the lead point on it he will be able to reproduce a consistently fine outline on the wood.

In tracing the design there can be no doubt that the worker who has had no experience in drawing is at a disadvantage. Still, as it is only a matter of going over an existing line with a steady hand, a little practice should give him the required skill.

The real reason why many workers come to grief in tracing with carbon paper is that they only imperfectly realise the importance of a correct outline. This carelessness of perception—for it is only carelessness—is the cause of much imperfect cutting. Tracing is necessarily slow and tedious work, but after all no work is worth doing unless it is done well, and when tracing must be done the trouble should be faced bravely. In the case of a fret or inlay the pencil should be kept on the outside edge of the printed pattern, so that the saw may afterwards follow the outline transferred to the wood. This point must be remembered, otherwise the finished fret will appear either lighter or heavier than the original design. Straight lines must be ruled with a flat straightedge, and being taken with tenons, slots and half-cut joints, circles or parts of circles should be described with a pair of pencil compasses.

When the ornamental part of the work is taken in hand it will be found that the glossy mark left by the pencil on the diagram indicates clearly how much of the drawing has been done, and obviates the necessity for continually raising the paper to see how the work is progressing. The skilled draughtsman has many opportunities for correcting any little errors in printing which may have crept into the design. On the other hand, the unskilled encounters endless pitfalls into which he will stumble if he attempts to hurry over his work. No graver mistake can be made than in doing slipshod tracing under the comforting delusion that errors can be rectified in cutting or carving. The probability is that the tool work will merely exaggerate the mistakes.

A firm pressure of the pencil is necessary to give a good outline, but any actual indenting of the wood should be avoided. If the black carbon mark is carried down into the grain of the wood, extra sandpapering will be required to remove it. When the work is supposed to be completed, the paper should be gently raised to see that no part has been omitted. In doing this it is wise to keep the two top pins in, so that if any lines have been left out the design may not be displaced.

An incidental advantage of tracing in this way is that, as the carbon paper is coated on both sides, an impression is left on the back of the design as well as on the wood. In this way, if a reversed diagram is ever wanted, the design may be laid face downwards on the wood and the tracing done from the outline on the back.

Bookcase and Newspaper Rack.

AMONG the lesser contrivances that at once win appreciation by reason of their real usefulness among the home surroundings may be included a combined bookcase and newspaper rack, such as that sketched at Fig. 1. It is the sort of thing that it does not pay one to

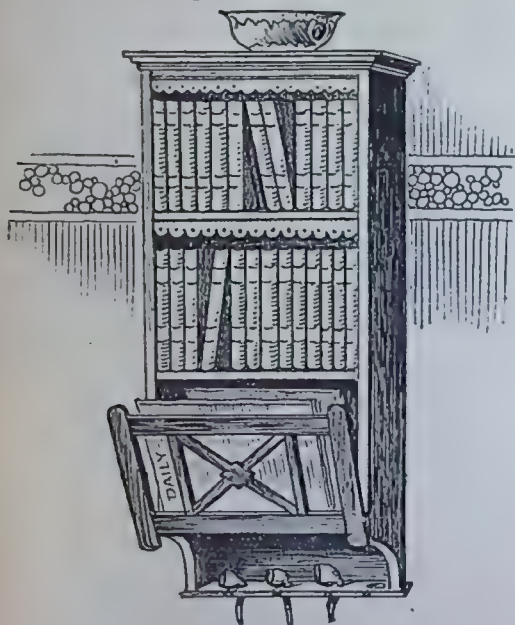


FIG. 1.—BOOKSHELVES AND PAPER RACK.

be without when work has to be done, at a writing table or desk, and being of handy size it will be found a serviceable and tidy arrangement wherever placed in the room. Mahogany, walnut and oak are all suitable woods, or either bass-wood or birch may be substituted, to be stained to imitate the hard woods named, with fair result.

Dimensions are placed at 3 ft. high by 18 ins. wide by 8 ins. deep, back to front, over sides. The shelves may be spaced about 10 in. apart, and the upper two fitted with leather edging. A useful pipe rack is also added below, and the width of the shelf will be sufficient to take a small jar, box, or packet, and odd kit of the smoker.

In getting out the stuff, the top (A, Fig. 2) will finish 18 in. by 9 in. by $\frac{7}{8}$ in., moulded front and sides. Three mortises should be cut to receive the tenons on sides, or the latter may be dovetail-grooved in instead. The sides, B, will require two pieces, 3 ft. by 8 in. by $\frac{7}{8}$ in. or $\frac{3}{4}$ in.; hardwood will serve if the stuff is sound and well seasoned. The lower four inches will be curved away to a width of 3 $\frac{1}{2}$ in., and the top edge cut with three stub tenons to enter top. The inside face can also be grooved for two intermediate shelves and mortised for tenons on newspaper shelf. A stronger and better method of putting the parts together, however, is to dovetail-groove

them together as at K and L (Fig. 3), the sides being cut into the moulded top and the shelves into the sides. Each is notched back $\frac{1}{2}$ in. from front edge to mask the joint, the parts being then pushed home into position from the back. The cutting of the joint requires some care and knack, and it would be as well to make a trial cut with spare wood before touching the stuff in hand. A piece, 16 $\frac{1}{2}$ in. by 1 $\frac{1}{2}$ in. by $\frac{7}{8}$ in. may be cut for the narrow front rail, C, which can be dovetail-slotted in, or merely stubbed, or dowed and glued with a couple of screws through from under into top. The lower edge is finished with a scratched bead. For the three shelves there will be required three pieces, 16 in. by 8 in. by $\frac{3}{4}$ in. or $\frac{7}{8}$ in., planed up clean and true to finish flush with the front edges of sides. As shown, the shelf D will be notched and grooved into sides, the lower shelf being cut with three tenons for extra grip. Each may be stiffened in holding by fitting a neatly rounded and glued fillet into the angles under, taking care that the grain of the piece agrees with that of the shelves and side to which it is glued.

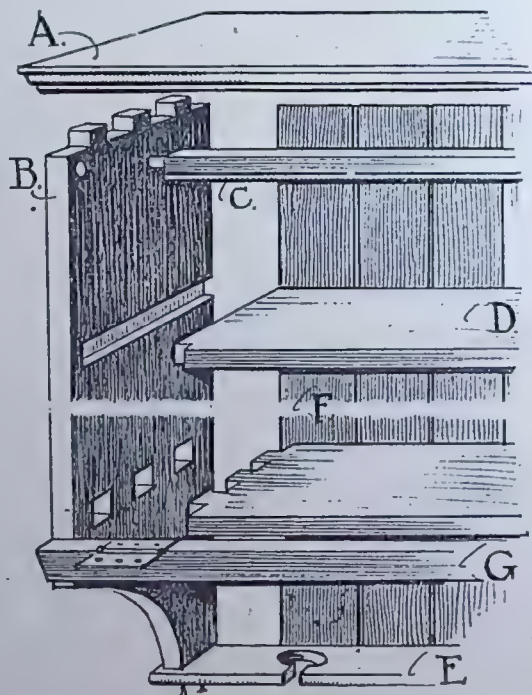


FIG. 2.—GENERAL METHOD OF CONSTRUCTION.

The lower shelf for pipes, &c., E, need only be screwed into position, the screws being entered slightly aslant. Detail for the pipe holder cuts is offered at Fig. 3, the front edge being neatly rounded for finish. The back can be of narrow matching, say 3 in. or 4 in. wide, screwed on, or a panelled back may be preferred for its better appearance. In this case two stiles will be wanted,

3 ft. long by $2\frac{1}{2}$ in. by $\frac{1}{2}$ in., and a rail may be fitted to come behind each shelf—four in all. so that a separate panel may show between each book space. These rails will then afford a screwing to the back edges of shelves, and the panels can be of $\frac{1}{4}$ in. stuff. The simpler way will be to fit a back of stout three-ply.

The newspapers are retained in position by a rack or frame which slopes outwards. This is hinged to a slip, G, bevelled on the outer face to correspond with the angle of the slope. The slip is 16 in. by $1\frac{1}{2}$ in. by 1 in., screwed into position flush with the shelf and fitted with two 2 in. brass butt hinges, as indicated. For the rack frame a separate sketch is given at H. For this two stiles, 12 in. by $1\frac{1}{2}$ in. by $\frac{3}{4}$ in. or $\frac{1}{2}$ in., and two rails, 16 in. by $1\frac{1}{2}$ in. by $\frac{3}{4}$ in. or $\frac{1}{2}$ in., should be got out, to be mortised and tenoned together. The two shorter stiles within the frame can be 8 in. by $\frac{7}{8}$ in. by $\frac{1}{2}$ in., stubbed in at each end. The cross bars will require two pieces, 12 in. by $\frac{7}{8}$ in. by $\frac{1}{2}$ in., halved together in centre and cut to spring tightly into angles of framing with a touch of glue. A small square of $\frac{1}{2}$ in. stuff, cut in four, will supply the four quarter-blocks which will be glued on as a stiffening finish to the centre.

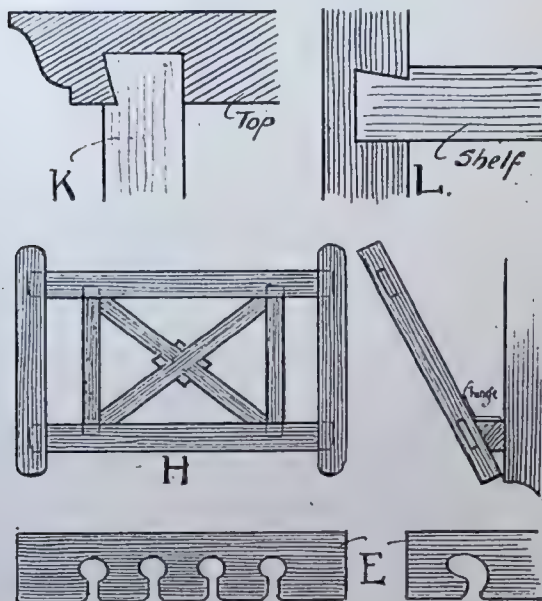


FIG. 3.—JOINTS FOR ALTERNATIVE FITTING AND DETAIL OF NEWSPAPER RACK.

An alternative treatment for the frame would be to fit five lengths of lacquered brass tubing, 8 in. by $\frac{1}{2}$ in. diameter into holes cut with a $\frac{1}{2}$ in. centre bit. For the alternative cupboard treatment, shown at J (Fig. 4), a cornice and narrow frieze effect is suggested with a four-panel clear glass door. Size for the door may work out at about 21 in. by 14 in., stiles and rails being $1\frac{1}{2}$ in.

wide by $\frac{7}{8}$ in. or $\frac{3}{4}$ in. thick. The astragal framing will be mitred together in centre and sprung into position, being merely notched into inner edges of door frame, which is not moulded.

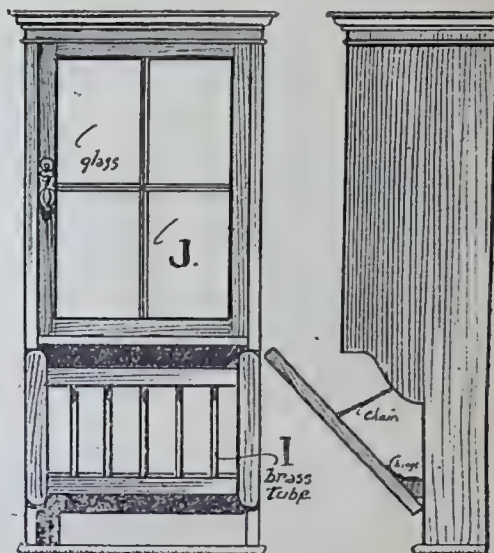


FIG. 4.—ALTERNATIVE SUGGESTION, WITH BOOK SPACE USED AS A CUPBOARD.

One pane of glass may lie flat up against this the whole being beaded in with wood slip or silk cord from behind. The door is shown hinged between the sides, in which case it would be as well to ensure the inside space being sufficient to take the size of book to be contained. If the door is hinged to open on the sides, allowance must be made for the cornice to project over the thickness of the door. A ball catch and brass drop handle should be fitted.

		Long.	Wide.	Thick.
A	one top	18"	x 9"	x $\frac{1}{2}$ "
B	two sides	3'0"	x 8"	x $\frac{1}{2}$ " or $\frac{3}{4}$ "
C	one front rail	16"	x 11"	x $\frac{1}{2}$ " or $\frac{3}{4}$ "
D	three shelves	16"	x 8"	x $\frac{1}{2}$ "
E	one (pipe) shelf	17"	x 4"	x $\frac{1}{2}$ "
F	back matching	12"	x 4"	x $\frac{1}{2}$ "
	or { two stiles	3'0"	x 21"	x $\frac{1}{2}$ "
	{ four rails	16"	x 12"	x $\frac{1}{2}$ "
	{ panel (to cut)	2'8"	x 12"	x $\frac{1}{2}$ "
G	one bevelled slip (for hinges)	16"	x 11"	x 1"
H	rack frame			
	two stiles	12"	x 11"	x $\frac{1}{2}$ " or $\frac{3}{4}$ "
	two rails	16"	x 11"	x $\frac{1}{2}$ " or $\frac{3}{4}$ "
	two short stiles	8"	x $\frac{7}{8}$ "	x $\frac{1}{2}$ "
	two cross bars	12"	x $\frac{7}{8}$ "	x $\frac{1}{2}$ "
I	five lengths brass tube if required	8"	x $\frac{1}{2}$ " diameter	
J	door if required.			
	two stiles	21"	x 14"	x $\frac{1}{2}$ " or $\frac{3}{4}$ "
	two rails	14"	x 11"	x $\frac{1}{2}$ " or $\frac{3}{4}$ "
	Astragal mould	3'0"	x $\frac{1}{2}$ "	

The above list of dimensions will greatly assist in getting out the stuff, all lengths being full and widths and thicknesses net finished sizes.

Wheel Making.

3.—Various Necessary Appliances.

AS promised in the previous article, we will now describe some of the appliances required which, if not absolutely necessary for wheel making, are in every case desirable; and as they can all be made at home there is little excuse for struggling along without them.

C, 3 ins. square; and D, 3 ins. deep by 2 ins. thick. But if for heavier work, such as the wheel we described last month, these sizes should be increased by an inch each way, and the larger of the dimensions given above should be adopted.

The whole must be put together very strongly with mortise and tenon joints, made in wheelwright's style; that is, the mortises should be made with the heads perfectly straight, so that the tenons fit tightly throughout, not at the

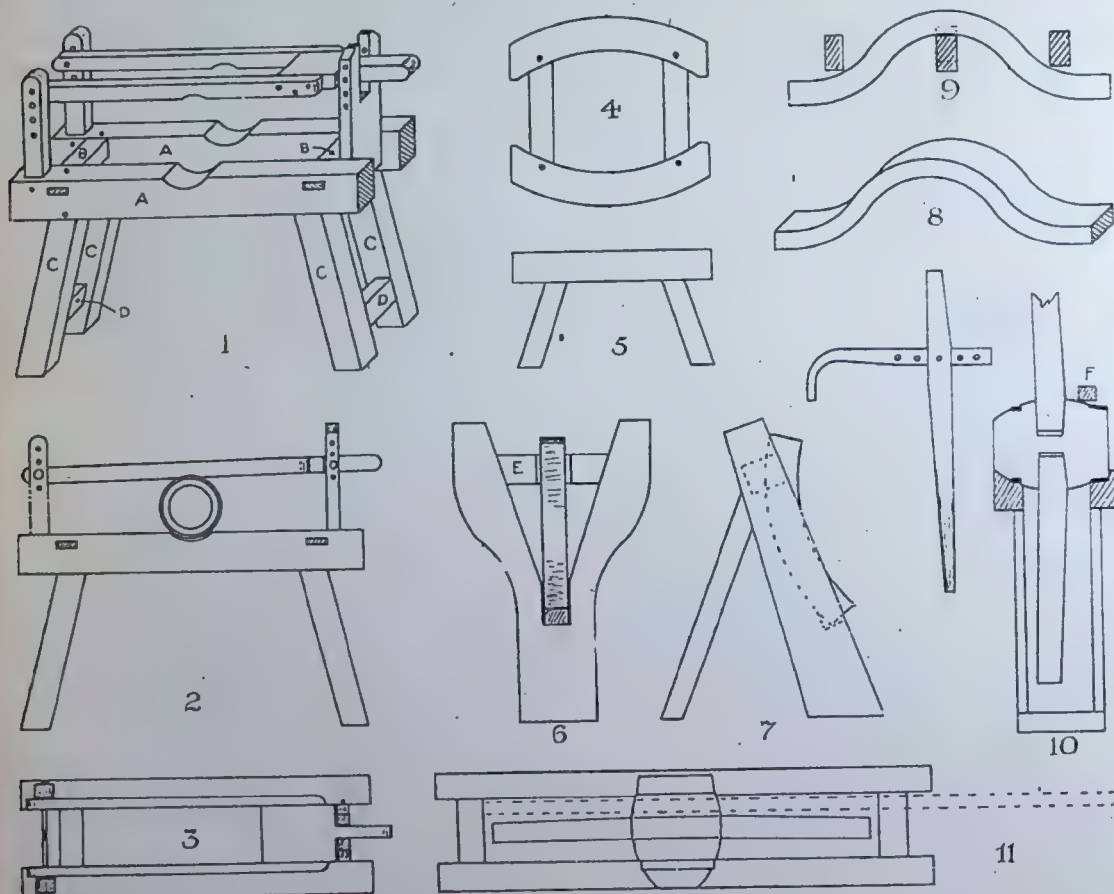


FIG. 1.—MORTISING FRAME. FIG. 2.—SIDE ELEVATION, WITH HUB IN POSITION. FIG. 3.—PLAN OF MORTISING FRAME. FIG. 4.—PLAN OF WHEEL STOOL. FIG. 5.—SIDE VIEW OF WHEEL STOOL. FIG. 6.—FRONT VIEW OF ADZING HORSE. FIG. 7.—SIDE VIEW OF ADZING HORSE. FIG. 8.—CURVE FOR ADJUSTING SPOKES. FIG. 9.—CURVE IN USE. FIG. 10.—SPOKING PIT WITH WHEEL IN POSITION. FIG. 11.—PLAN OF SPOKING PIT. FIG. 12.—DOG FOR ENTERING SPOKES IN FELLOE.

First we will take the hub mortising frame, as shown in Fig. 1, and also in elevation and plan in Figs. 2 and 3. The principal portion consists of the two sides (A), connected by the cross pieces (B), and mounted on the four legs (C), these latter being also connected by the cross pieces (D). The height of this part should be $2\frac{1}{2}$ feet, the length from 5 to 6 feet, and the width from 15 to 18 ins. If for light wheels only, the smaller of these dimensions may be taken, and the timbers may be:—A, 4 ins. deep by 3 ins. wide; B and

outside only. The tenons, too, must fit sufficiently tight as to require considerable force to get them in position.

The two side pieces (A) must be cut away at the middle as shown, making the curve about 6 ins. radius. It will then hold a hub of any size without having a tendency to roll from side to side.

The upper fittings consist of two standards at one end, tenoned firmly into the sides and fixed with pins. At the other end a wide standard

fits between the sides and is fixed to the cross piece. This latter standard is slotted down about half its length, the slot being about one-third of the width. The outside parts of the slotted portion are perforated at intervals as shown, the standards at the other end being similarly perforated.

Two side pieces, about 2 ins. deep by 1 inch thick, are pivotted to the separate standards, and are connected at the other end with a solid piece, which fits into the slot of the solid standard, being bored so that it can be fixed at any required height by means of an iron pin. As the other end is also adjustable in height, hubs of any size may be fixed firmly in it for mortising.

It is as well to cut away the side pieces to correspond with the depression in the main sides, thus giving better holding power.

In the side elevation, Fig. 2, a hub is shown fixed in position for mortising, and no further instruction is required beyond what was given in the previous article.

In Figs. 4 and 5 we show what is usually called a wheel stool. It is really a four legged stool, the top of which is formed with two wheel felloes, connected by cross pieces. In use the hub of the wheel drops down in the middle, the spokes resting on the four sides, and allows of the wheel being manipulated in any way without risk of its falling off. The legs should be spread out well, as in Fig. 5, and the height is the same as that of an ordinary shop trestle.

In Figs. 6 and 7 we have an adzing horse, in which the felloes rest while they are carved accurately to shape on the inside. Of course the adze is seldom used if a band saw is available; but this is probably not the case with the majority of our readers.

The main part of this horse can be made best by utilising the forked branch of a tree, which is held at the sloping position shown by the two legs at the back. A strong cross piece must be fitted in as A, and this is notched in the middle to take the thickness of a felloe, and an inch to spare for a wedge if necessary. A resting place for the end of the felloe is cut away in the fork as shown by dotted lines in Fig. 7. In both drawings a felloe is shown in position for working on; the exact method of doing this will of course be referred to in a later article.

In Fig. 8 we have a necessary appliance for use in driving in the spokes. It should be about two feet long, curved as indicated, and it is shown in use in Fig. 9. Often in spite of careful mortising of the hub some of the spokes refuse to come in line, standing back or forward beyond their fellows. In Fig. 9 the middle spoke shown is supposed to have been in the position of the dotted lines, but by forcing on the curved piece as shown and giving the refractory spoke an additional blow or too with the sledge hammer it can usually be brought into line.

We have seen the spokes for light wheels driven into the hub while fixed in the mortising frame (Fig. 1); but this is not advisable, and for

heavy work quite inadmissible if the spokes are made to fit as tightly as they should do. The better way is to use a pit sunk into the ground, and fitted with a wood frame at the top, as in section Fig. 10. The pit will be better if lined. The sides of the pit frame should be recessed to take the hub, and this latter is best held in position by a lever under one end of the frame, and resting on the hub, as at Fig. 10, and as dotted lines in Fig. 11. The holding power may be a heavy weight, or a small boy may be made to sit on the free end. (The writer has a lively recollection of considerable time spent in this way in his younger days.)

In driving the spokes into the hub they should not be done consecutively, but at opposite sides alternately; this is less liable to split the hub, and the spokes will be easier to adjust. In the case of a refractory spoke, it should be left not quite driven home, until those on either side are inserted satisfactorily, when the necessary adjustment may be made.

In Fig. 12 we show an appliance used for pulling the spokes together to make them enter the felloes, which we shall come to later. This consists of the stock, which should be about four feet long, three inches by two in size; one end is rounded off to form the handle, and at about nine inches from the other a mortise is made through it, in which the perforated iron bar can work loosely and be fixed in any position with an iron pin. The bar is finished with a hook as shown, the use of which we shall show later.

The whole of the appliances shown must be of hard wood, the mortising frame, wheel stool, curve, and dog (Fig. 12) being of ash, the adzing horse may be of oak or elm, and the spoking pit and frame of oak. This latter may be utilised for tying the wheels as well, provided a certain kind of tyre is used.

In our next we will resume work on the wheel itself.

(To be continued.)

Artificial Ebony from Oak.

The blocks of wood are immersed for 48 hours in a warm saturated solution of alum and sprinkled several times with a decoction of logwood; smaller pieces may also be steeped for a certain length of time in the decoction, which is prepared in the following manner: One part of logwood of best quality is boiled with 10 parts of water; it is then filtered through linen and the liquid evaporated at low temperature until its volume is reduced by one-half, and to every quart of this bath are added 10 to 15 drops of a saturated solution of soluble indigo entirely neutral in reaction. After having watered the blocks several times with this solution, the wood is rubbed with a saturated and filtered solution of verdigris in warm concentrated acetic acid, and this operation repeated until a black colour of the desired intensity is obtained. The oak wood dyed after this fashion is said to present an aspect similar to that of real ebony. The method is obviously unwieldy for large surfaces, even if satisfactory in other ways.

A Simple Type of Hall Chair.

IN almost every house there is an entrance lobby (or hall, whatever else we may be pleased to call it) which, no matter how small or narrow, is usually provided with a coat and umbrella stand and a chair. The chair may not be often used for the purposes that a chair is supposed to be called into being. Hats and parcels are perhaps more frequently seated upon it than persons. Still, the hall chair is regarded as quite as indispensable as the hall stand, and it is as well that a suitable chair for the position should be provided.

The back legs are 2 ft. 10½ ins. over all, this being the total height of chair. The thickness is 1½ in. net, the whole way down. At the top the width is 1½ in., at the seat it is 1½ in., tapering to 1½ in. at the floor. The "rake" is 2 ins.—that is, if a straight line be drawn from top to foot, there is a dip of 2 ins. The width across back legs at the top is 1 ft. 2½ ins., and at the floor 1 ft. 1 in. The little bit of shaping at the top of the legs may be easily worked from Fig. 2.

The height to top of seat is 1 ft. 5½ ins. The seat itself (all wood) is 1 ft. 3 ins. from back to front, 1 ft. 4 ins. wide at front and 1 ft. 1 in. at back. Its thickness may be ¾ in. The front corners are very slightly rounded, and the top front

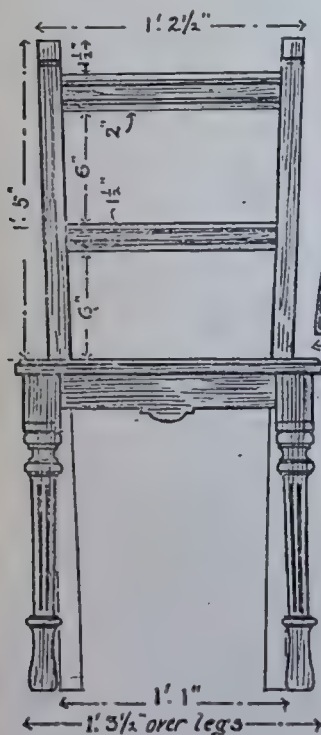


FIG. 1.—FRONT VIEW.

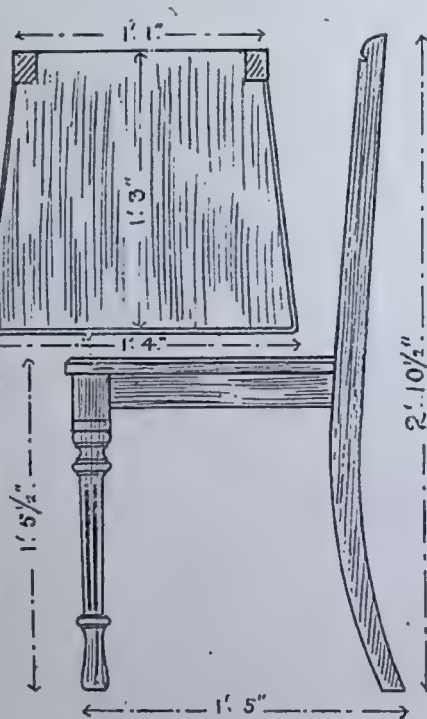


FIG. 2.—PLAN AND SIDE VIEW.

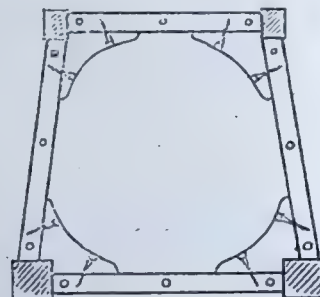


FIG. 3.—SECTIONAL PLAN OF UNDERSIDE OF SEAT.

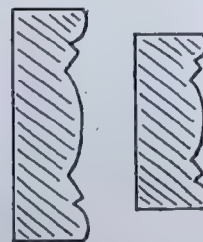


FIG. 4.—SECTION OF BACK RAILS.

Hall furniture is usually in oak. Sometimes, however, it is in dark walnut, and occasionally in mahogany. The chair shown here is suitable for either oak or walnut, but could be carried out in any wood. It may, if desired, be made in American whitewood, and afterwards stained and polished. A solid oak or walnut chair, however, is recommended, especially as the cost of wood is comparatively trifling.

The chair illustrated is simple in construction and is shown without carved work. The front legs are turned, with six flutes indicated on the plain tapered portion; the back rails have a simple mould; otherwise the chair is quite plain.

The general sizes are noted at Figs. 1 and 2, and these may be repeated here with a few additions.

edge is chamfered. The top side edges are also chamfered, but the chamfer should taper off to vanishing point as it reaches the back. The seat is cut away at the two back corners to take the back legs.

The front legs are turned from pieces 1 ft. 5 ins. long by 2 ins. square. The suggested detail, with scale, is given at Fig. 5, which may be taken as a working diagram. These legs should be provided with short tenons to enter the seat. Should the worker be unable to produce (or procure otherwise) turned legs he may substitute square ones for these. In this case the leg will taper from 2 ins. by 2 ins. at the top to 1½ in. by 1½ in. at the floor, and it will add to the appearance if the corners are stop-chamfered.

The width over the front legs (at the top) is 1 ft. $3\frac{1}{2}$ ins. Thus the rail between is $11\frac{1}{2}$ ins. net in length. This rail is 1 in. thick, $1\frac{3}{4}$ wide on the straight, and $2\frac{1}{2}$ ins. wide at the middle. It is tenoned to the legs. The side rails ($1\frac{3}{4}$ in. wide by 1 in. thick) are also $11\frac{1}{2}$ ins. long net, and are tenoned to front and back legs. The back rail works out at $10\frac{3}{4}$ ins. long net between the back legs, to which it is tenoned, and is the same width and thickness as side rails. All four rails should be set in about 3-16 in. from face of legs.

The positions of the two upper back rails are noted on Fig. 1. The upper one is 2 ins. wide, the lower one $1\frac{1}{2}$ in. wide, both finishing $\frac{5}{8}$ in. thick. Sections are shown at Fig. 4, but almost any section will do. Should the chair be in oak these back rails may be left plain. Both rails are tenoned to the back legs, and should be set in about 3-16 in. or $\frac{1}{4}$ in. from the face.

The construction has so far been indicated, and it will be seen that much depends on the accuracy of the tenons and mortises and on sound glueing. For the rest Fig. 3 (a plan of underside of seat) will

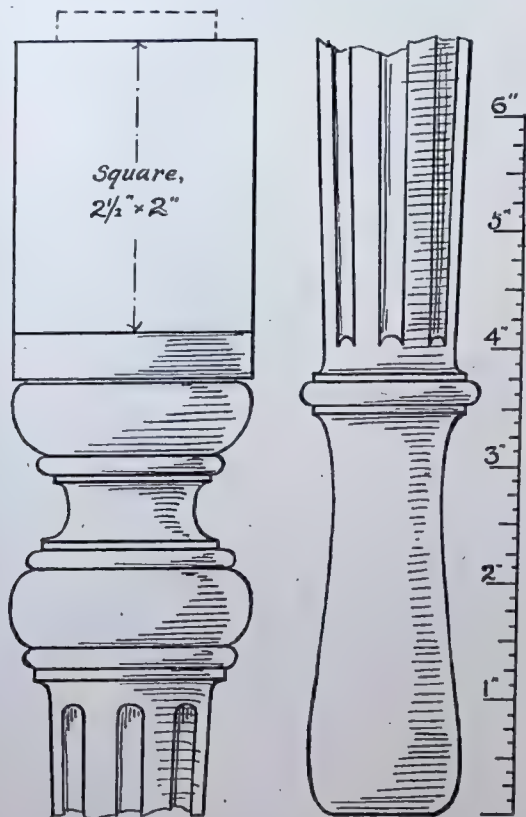


FIG. 5.—DETAIL OF TURNED AND FLUTED LEG, WITH SCALE.

from below, slots being bored in the rails for this purpose. Four angle blocks ($3\frac{1}{2}$ ins. by $3\frac{1}{2}$ ins. and 1 in. or $1\frac{1}{4}$ in. thick) are fixed at the corners. These are glued to seat and rails, also being secured

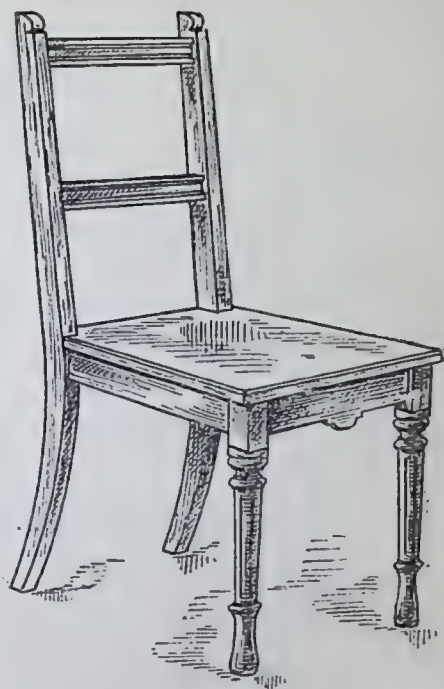


FIG. 6.—SKETCH OF CHAIR.

to the latter by screws passed through as indicated. This is a simple but strong method of fixing, and should give the amateur little trouble.

A walnut chair should be polished. An oak one should be finished to match the hall stand (if there is one), and will look best if lightly oiled and waxed, or fumed and waxed.

Wood Turning.

Why is wood turning not practised more by the carver, fretcutter or amateur carpenter? Turning is a most fascinating form of woodworking. For the amateur it is an ideal handicraft, never tiring, never getting stale, and one that may be followed with very little outlay. The peculiar merit of THE WOODWORKER series handbook, "Simple Lessons in Wood Turning," price sixpence, is that it avoids the more or less vague line of instruction so often met with, and enters more into those useful little details which make for success. The aim has been to give the learner an elementary education in the craft, and no worker gifted with the practical instinct can fail to find the chapters of real and lasting help. The illustrations, which number nearly a hundred, include photographs representing the actual work in various stages of progression. These in themselves provide practical lessons. The remainder are chiefly scale working drawings, from which the finished articles can be turned. Price sixpence, or post free for sevenpence, from THE WOODWORKER AND ART CRAFTSMAN, 57, Farringdon Road, London, E.C.

explain. The seat, $\frac{3}{4}$ in. thick, is solid, and should have two shallow mortises to take the short tenons of the front legs. When the rails have been secured to the legs the seat is screwed to the rails

The Question Box.

As one of the main objects of **THE WOODWORKER AND ART CRAFTSMAN** is to help its readers, questions of general interest dealing with any branch of handicraft will be answered on this page.

As it is impossible to reply fully in these columns to all queries received, questions on subjects within the scope of this Magazine are replied to by post under the following conditions:—(1) Questions dealing with distinct subjects should be written on different slips, on one side of the paper only, and the sender's name should be written on the back of each. (2) Questions should be accompanied, wherever possible, with fully dimensioned sketches, and correspondents are recommended to keep a copy of their Questions for reference. (3) A stamped addressed envelope (not post-card) should be enclosed. (4) Questions will be answered as early as possible after receipt, but when sketches have to be prepared, or when research has to be made, a short interval must elapse before the Reply can be forwarded. The insertion of Replies in this column cannot be guaranteed, but all Replies of general interest will be given when space permits. All Questions should be addressed to The Editor, **THE WOODWORKER AND ART CRAFTSMAN**, 57, Farringdon Road, London, E.C.

Artists' Signboard.

[347] C. N. G. (Camborne) writes: "Will you kindly suggest a design for a small signboard, say 9 ins. by 12 ins., to hang on a hook outside the front door of a house? My idea is that the lettering should be raised and gilded, as it sets back 10 or 12 feet from the road, and would thus be readable to the passer-by."

REPLY.—For a signboard of such a small size we do not think that you will be able to find anything more effective in idea than an artist's palette. We have posted you a rough sketch, and suggest that the sign be in oak, the edges being rounded to turn the weather. The lettering should be cut deep and clean, and gilded on the face. The ground work should be left from the tool, which should be a flat gouge. This gives a very fine effect, and it is much to be preferred to a smooth surface for sign and show case work.

Overmantel Sizes.

[348] H. T. (Barrow). REPLY.—Several articles on the making of overmantels have appeared in **THE WOODWORKER**. If you will turn up the following dates you will find an overmantel designed on similar lines to your sketch. All the necessary sizes, joints and methods of making are described:—October, 1910; February 12, 1910; May 1, 1909; June 5, 1909; January 30, 1909; and May 5, 1909 (page 97).

Sideboard.

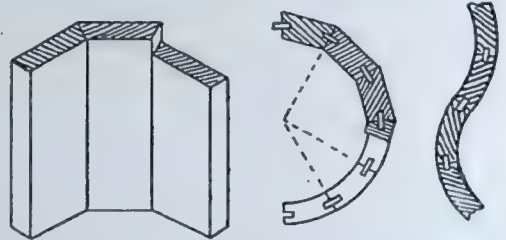
[349] J. L. (Liverpool) is about to make a sideboard, of which he encloses a sketch, and asks advice as to size and construction.

REPLY.—In **THE WOODWORKER**, dated November 14, 1908, we had an article on the making of a sideboard. The methods of construction, joints, &c., are fully illustrated, and the lower portion is almost a duplicate of the sketch which you enclose. We would suggest that you see this number, and also those dated February, 1908, October 16, 1909, and April 10, 1909. The latter shows many constructional details which apply to the design shown in November 14, 1908. We should like to point out to you that the feet shown in your sketch, the three elliptical mirrors under the shelf, and the large mirror above the shelf are out of keeping with the other portions of the article, and the construction would be necessarily bad. We advise you to follow the one in November 14, 1908, adding the extra drawer shown in the centre.

Coopering Joints.

[350] J. W. P. (Cockermouth) writes to ask for an explanation regarding the term "coopering joint."

REPLY.—The term "coopering joint" is seldom used in the cabinet-making trade, although we find it mentioned in a few of the text books, and also in the City and Guilds programme of the cabinet-making examination. The name evidently has come from the coopering trade, in which it is one of the commonest forms of joint used in the making of casks and barrels.



EXAMPLES OF COOPERING JOINTS (No. 350.)

The cabinet-maker has adopted this method of jointing when making and building up circular and shaped work, such as coal-boxes, wine coolers, cylinder desk falls, curved and serpentine panels, ogee and kidney shaped carcasses and the like. Three sketches are given, two of which show the joint tongued.

Oxidising a Copper Panel.

[351] F. T. (Bournemouth). REPLY.—To oxidise a copper panel, dip the panel, after being properly cleaned and polished, into a solution composed of one part of ammonium sulphide and three parts of hot water. Allow it to remain in the solution until the desired shade of colour is reached, and then quickly rub the parts to be left bright with a piece of soft rag. The panel should then be washed in warm water and dried. The operation should take place out of doors, owing to the disagreeable smell of the liquid.

Fastening Silver Without Solder.

[352] J. T. A. (Long Eaton). REPLY.—To fasten two pieces of silver together without solder, the easiest method would be to solder a thin narrow band of silver on the outside of the new back, so as to make a box to contain the piece of work. The upper edge of the band should be rubbed over on to the work with a steel burnisher. This will hold it quite firm, and will also make a neat job.

Silver Box Making—Soldering Hinges.

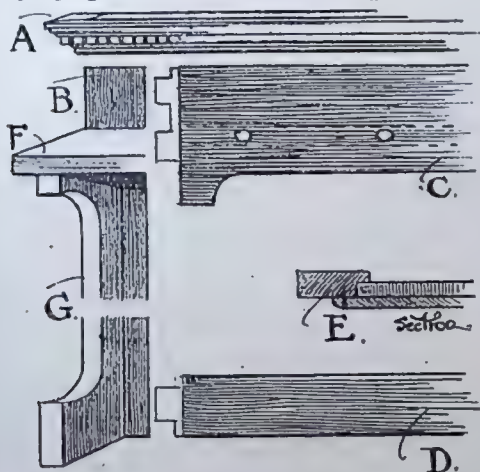
[353] F. B. (Barnstaple) asks how to solder hinges on silver boxes, and how to keep wood from warping when being heated.

REPLY.—Soldering on hinges is a most troublesome proceeding, and the method depends on the size of the box. Generally, the best way is to place the side of the box on a piece of carbon or charcoal, and clamp the ends down. The hinge and the space it is to occupy should be coated with a mixture of powdered borax (melted and ground down) and paraffin. The solder should be filed to a powder with a coarse file, and laid between the hinge and the side, and then the flame applied until the solder runs. At this point pressure should be applied with a length of steel or other metal rod for a few seconds after the flame has been removed. To prevent warping confine the flame to the immediate area to be soldered.

Washstand—Details of Construction.

[354] E. A. (Worthing) is making the washstand illustrated on page 292 of our issue for November, 1912 (Vol. XVI., "Question Box" No. 318), and asks for some details as to construction.

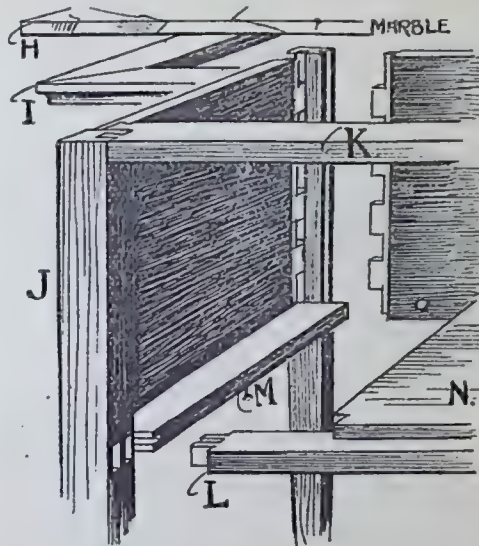
REPLY.—As you appear anxious to turn out a bit of your best we give a couple of sketches which should assist you to work out the washstand. The corner mould of back (A) should finish $1\frac{1}{2}$ in. high by $1\frac{1}{4}$ in. wide, back to front, and may either be mitred round face and return of back framing, or have the lower members mitred and the upper three moulded on a piece $\frac{1}{2}$ in. thick, and glued down into position. The mould may be simplified, if desired, or the section can be purchased with dentil from Messrs. Borst Bros., 370, Old Street, London, E.C., if you are unable to work it yourself. The uprights (B) may show $2\frac{1}{2}$ ins. to 3 ins. wide by $\frac{3}{4}$ in. thick, to be mortised for tenons on rails to enter as indicated. The top rail (C) can be cut from a piece 6 ins. wide, the lower edge being shaped up $1\frac{1}{2}$ in. with a couple of tenons each end; or the parts may be dowelled together if preferred. The lower rail (D) can be $2\frac{1}{2}$ ins. wide, tenoned or dowelled to uprights, both rails and uprights being also rebated to the thickness of tiles or marble slab, say, $\frac{3}{4}$ in., to be dropped in and covered by the back of $\frac{1}{2}$ in. stuff screwed on as at E. A $4\frac{1}{2}$ in. by $\frac{3}{4}$ in. shelf is indicated (F) to be grooved under for brackets to enter, and be screwed through from back of top rail, as seen. The supporting brackets, shaped to match the top rail, can finish $5\frac{1}{2}$ ins. wide at base, and $1\frac{1}{2}$ in. at narrowest part. The back can be fixed by dowels into the marble-table top, or may be simply rested on, relying upon its own weight to keep it in position.



DETAILS OF WASHSTAND—UPPER PART (No. 354.)
See also No. 318, Nov., 1912, page 292.

Coming to the lower carcase the marble slab for top can finish 19 ins. to 20 ins. back to front, by $\frac{3}{4}$ in. thick. Rouge Royal is often preferred for mahogany and St. Ann's for walnut. The table top may rest direct upon the carcase framing, but has a more finished appearance if a $2\frac{1}{2}$ in. by $\frac{3}{4}$ in. lining, mitred as at I is fitted under. The legs (J) can finish $1\frac{1}{2}$ in. by $1\frac{1}{2}$ in., and will be tapered at ground to $\frac{3}{4}$ in. by $\frac{3}{4}$ in. to take castors. The front rail (K) $2\frac{1}{2}$ in. by $\frac{3}{4}$ in. is shown dovetailed to legs and sides and can be nailed. The lower rail (L) 2 in. by $\frac{3}{4}$ in. is double tenoned to legs, and can be tongued to enter

the slips (M), which can be pushed home, and screwed to under edge of sides. Upon these rails the bottom (N) of $\frac{1}{2}$ in. stuff can rest, cut to fit close up to doors as a stop. Sides and back can be of $\frac{3}{4}$ in. stuff, tenoned or dowelled to legs. Doors should be of 1 in. stuff, rails and stiles being $1\frac{3}{4}$ in. wide, rebated to receive $\frac{3}{4}$ in. or $\frac{1}{2}$ in. panels. The meeting stiles may, however,



DETAILS OF WASHSTAND—LOWER PART (No. 354.)
See also No. 318, Nov., 1912, page 292.

be $1\frac{1}{2}$ in. wide, so that the wood space between the panels is lightened a trifle. Oak, walnut and mahogany are suitable woods, but the sketch you refer us to is intended for mahogany with veneered panels, reversed grain and inlaid banding, with $\frac{1}{2}$ in. banding also on legs and upper part of back. Chequered inlay is suitable for all three woods, and our handbook on Inlaying and Marquetry (7d., post free) will afford you a lot of really useful information on the subject.

Oriental Puzzle Rings.

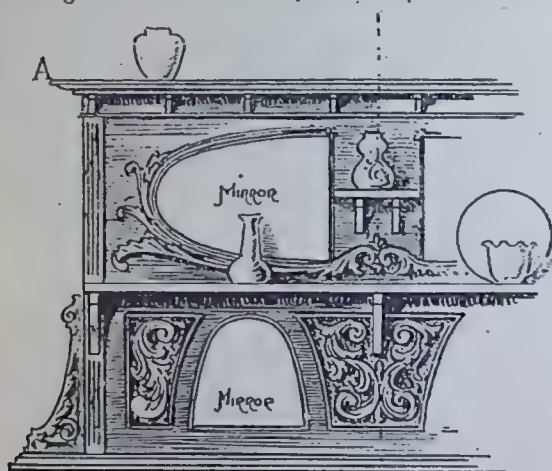
[355] F. B. (Barnstaple) asks for information regarding Oriental puzzle rings, how they are constructed and where designs may be obtained.

REPLY.—The making of puzzle rings is exceedingly difficult, as the work has to be so perfectly accurate. Oriental jewellers have, by constant practice, attained great perfection in the art. Some of the patterns are hereditary possessions of certain families in India, and are handed down from father to son. We do not think that it would be possible to construct them from instructions and diagrams. The best method would be to obtain a simple one in silver wire and copy it exactly. European *gimmel* (or *jumelle*) rings are not nearly so intricate, and could be much more easily carried out by anyone who would give the necessary attention to accuracy. They were mostly made in two (or three, sometimes) parts which could be worn separately as betrothal rings, the third being worn by a witness to the contract. The principle on which most puzzle rings is based can be exemplified by taking a strip of paper, giving it two or more twists, and then gumming the ends together. It should then be cut into three or more strips, which will give interlacing rings, with an additional twist on each.

Overmantel with Semi-Oval Mirrors.

[356] H. C. B. (Rotherham) writes to say that he has three semi-elliptical mirrors which he wishes to make use of for an overmantel. Two are $16\frac{1}{2}$ ins. by $11\frac{1}{2}$ ins., and two 20 ins. by 10 ins.

REPLY.—The semi-elliptic mirrors you have could, we think, be better utilised for small wall brackets, but as you ask for an overmantel we offer a rough suggestion for including the four, with the addition of shelves and a little carving. Dimensions as shown would work out at 2 ft. 9 ins. high by about 5 ft. 4 ins. The latter dimension could, however, be reduced by leaving out the end brackets, to finish 4 ft. 6 ins. or so.



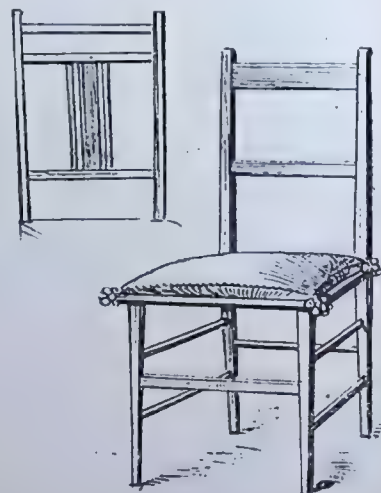
OVERMANTEL WITH SEMI-ELLIPTICAL MIRRORS
(No. 356.)

The cornice (A), $\frac{3}{4}$ in. thick, is also intended for a shelf $4\frac{1}{2}$ ins. wide to be supported on eight small shaped brackets 3 ins. by 2 ins. by $\frac{3}{4}$ in. The height from the bead below these brackets to over cornice shows 3 ins. Space between this bead and the centre shelf is 15 ins., the space below the shelf being also 15 ins., exclusive of the base mould, which can be $1\frac{1}{2}$ in. or slightly less. The centre shelf may be up to 6 ins. wide by $\frac{3}{4}$ in., and would be improved if moulded or finished bow shape to harmonise with the line of the bevelled plates. The three supporting brackets for this shelf can be 6 ins. by 4 ins. by $\frac{3}{4}$ in. or $\frac{7}{8}$ in., grooved into under edge of shelf, and screwed into position from the back. The smaller shelf between the upper mirrors shows 7 ins. by 4 ins. by $\frac{3}{4}$ in., and the two supporting brackets 3 ins. by $2\frac{1}{2}$ ins. by $\frac{3}{4}$ in., the shelf being slightly shaped, and the brackets curved ogee. The back itself can be of $\frac{3}{4}$ in. boards, neatly glue-jointed up and dowelled into 2 in. uprights, each post being finished with three flutes as indicated. The carving above this shelf can be fretcut to follow the line of the openings for mirror (which we presume you will mould), and be afterwards finished with gouge and chisel. The grain of the fret should, of course, agree with that of the wood to which it is glued, and it can be cut in two pieces to be neatly joined. The lower panels indicated can be moulded with a hollow to finish with a foliated scroll detail. The end brackets will be dowelled into position to uprights, and the base mould rebated to receive the parts above it can be screwed into position from the underside.

Bedroom Chair.

[357] G. H. (Troon) asks for a design for a bedroom chair to match the suite described in April, June, August and September issues, 1910 (Vol. XIV.).

REPLY.—The chair sketched would go well with the suite referred to if a quite plain design is required. Finishing dimensions may work out as follows:—Height of seat from ground, $17\frac{1}{2}$ ins.; width of seat, 14 ins. to $14\frac{1}{2}$ ins.; depth, back to front, $14\frac{1}{2}$ ins.; framed up of stuff 1 in. thick by 2 ins. wide, including rebate for caning; seat tapers to $11\frac{1}{2}$ ins. at back; front legs, $1\frac{3}{4}$ in. by $1\frac{3}{4}$ in., tapered to $\frac{3}{4}$ in. by $\frac{3}{4}$ in. at ground; front rail, 1 in. by $\frac{3}{4}$ in. thick, or $\frac{1}{2}$ in. thick will do; side and back leg rails, $\frac{5}{8}$ in. diameter; height of back from seat, $18\frac{1}{2}$ ins., making the back legs 3 ft. long overall. They should finish 1 in. net wide on face, by 1 in. thick at top, thickening to $1\frac{1}{4}$ in. at seat and continued same thickness to ground. The rake or spring of the legs when laid on the floor should show about $1\frac{1}{4}$ in. in line with the seat. Width for chair back, as drawn, is $11\frac{1}{2}$ ins.; top rail, 2 ins. wide by $\frac{3}{4}$ in.; lower rail $1\frac{1}{2}$ in. by $\frac{3}{4}$ in. thick. These rails look better and make a more comfortable chair if curved back 1 in. If a wide chair back is required, it may measure 14 ins. at top, tapering to $11\frac{1}{2}$ ins. at ground over legs. A thin cushion tied to the chair seat as indicated will look well, and a 3-ply seat may be used under if you cannot get caning done. The alternative back may perhaps be more to your liking.



BEDROOM
CHAIR, TO
MATCH SUITE
OF BEDROOM
FURNITURE
ILLUSTRATED
IN VOL. XIV.,
APRIL, JUNE,
AUGUST AND
SEPTEMBER,
1910.
(No. 357.)

Dimensions will be the same as above except that the rails are 1 in. wide by $\frac{3}{4}$ in. thick, and the slats forming the panel $\frac{1}{2}$ in. by $\frac{3}{8}$ in., with a $1\frac{1}{4}$ in. by $\frac{3}{8}$ in piece between.

Firing Champlevé Enamels.

[358] R. G. (Sheffield) writes:—"Will you please say how bent shaped pieces of champlevé enamel are fired. How are they done in workshops—fired on shaped planches of iron (outlines of the articles to be fired), or in plaster-of-paris moulds?"

REPLY.—The best way of doing this is to bend a piece of thin sheet iron to exactly fit back of curved piece of metal, and set it on another planche. Coat it well with whitening or loam; otherwise in the heat small fragments of oxide (rust) will fly off and if they fall on to the enamel will discolour and ruin it. Additional

care should be taken in putting bent pieces into the muffle, as the enamel is always liable to fall off. A tiny speck of tragacanth mucilage will entirely obviate this if it is found troublesome. Plaster-of-paris (or, better still, a mixture of plaster and Tripoli powder) may be used to make shaped supports, but they are liable to crack, and if used must be carefully and slowly dried or they will ruin the work. Personally we prefer the iron. As to difficulty of shaping the iron, quite thin sheet will do, and if made larger than the article the curve can be prevented from opening out too flat by a twist or two of binding wire at each end. If the plaque is very large, it might be well to support the iron from underneath with fragments of broken muffle. Very tiny pieces on the other hand simply require a thick coating of whitening on the back.

Plate Rack.

[359] T. J. T. (Carlisle) writes:—"Would you be so kind as to favour me with a design for a plate rack. I want it to fit between two windows, and to accommodate dinner plates and dishes. I thought an open shelf above and below would add to the appearance. The material will be red deal. I want the plates and dishes to stand edge up, with the edge facing the front. The height can be varied a little either way if desirable, but the width is fixed."

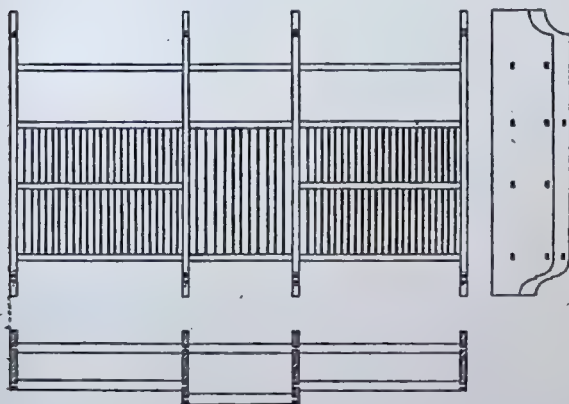


PLATE RACK: FRONT AND SIDE ELEVATIONS AND SECTIONAL PLAN (No. 359.)

REPLY.—We would not advise you to have a shelf under the plates and dishes as you suggest, on account of the drainage, but we have adopted your suggestion so far as to have two shelves above the rack. We have also broken up the front by allowing the middle portion to project two inches beyond the side portions, thus giving more depth for the dishes, and also giving the whole affair a much better appearance. The front elevation, side elevation and sectional plan are given in our sketch. The ends and the divisions should be of solid board, 1 in. or $1\frac{1}{2}$ ins. thick. The top of the rack and the shelf above will also be solid, but the bottom and the intermediate horizontal division in the side portions should consist of rails only; the front of these is fixed level with the uprights, but the back one should be kept forward as indicated. Round rods to divide the plates and dishes should be inserted both at the front and the back, and for the sake of appearance the four uprights should be shaped at top and bottom, as in side elevation.

Metalwork Instruction.

[360] J. B. asks for the name of any schools at which he may have private lessons in metalwork for several weeks during summer.

REPLY.—Mr. Ashbee used at one time to have a holiday school of metalwork, enamelling, etc. Most schools close in the summer, but if enquiry was made at the City and Guilds Schools, Leonard Street, E.C., we think you might get the address of a gentleman who would give private lessons. If not, the Central School of Arts and Crafts might help you.

Acid for Dipping Brass Preparatory to Burnishing and Lacquering.

[361] G. G. V. (London), writes:—"Will you please tell me what acid is used for dipping brass castings before burnishing and lacquering."

REPLY.—A pickle of nitric acid (one to eight) may be used, followed by scratch brushing and burnishing. If the object is small, a solution of oxalic acid may be rubbed over with a cotton rag. It is essential that grease or remains of a previous lacquering should be thoroughly removed by boiling in soda or by the use of benzine. Do not let the acid work too long or a roughened surface will result. Care must be taken not to touch the surface of the metal with the bare hand after cleaning or the lacquer will not lie well. Both acids mentioned are poisonous and must not be allowed to come in contact with flesh or fabrics.

London County Council.—Technical Education for Boys.

Courses of instruction are provided in London in day schools for boys who intend to enter skilled trades with a view to becoming skilled workers, foremen and managers. The instruction is specialised to prepare boys for entry into particular trades, to give a knowledge of the underlying principles of the trade, practical training in trade methods, and also to improve the general education. Each of these schools is fitted with specially equipped practical workshops and laboratories. Instruction is given by an expert staff thoroughly acquainted with workshop conditions, processes and methods. The courses of training are not intended to supersede apprenticeship, where such exists, but to prepare for and supplement workshop training. Boys who satisfactorily follow this preliminary training will be much better qualified to learn their trade thoroughly than those who enter workshops immediately on leaving the elementary school, and ultimately to attain to higher positions as foremen and managers.

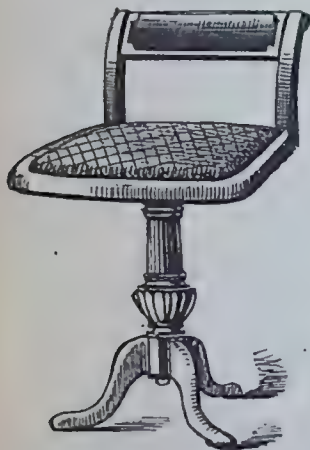
The school session will in 1913 begin on 1st April, and a detailed pamphlet giving particulars of any of the schools may be obtained from the Organiser of Trade Schools for Boys, Education Offices, Victoria Embankment, W.C., who will be pleased to see and advise parents by appointment at any time.

The next examination for scholarships will be held in December for boys taking up their awards in April of next year. Full particulars are given in the Council's Scholarships Handbook, obtainable from Messrs. P. S. King and Son, 2, Great Smith Street, Westminster, post free for 3d.

Have You a Soldering Outfit?—Those of our readers who have so far not used Tinol Soldering Paste should obtain one of the new Tinol outfits. The No. 1 Tinol Outfit, which costs 2s., post free 2s. 2d., contains a small tin of Tinol and one of the Tinol Lamps that have been specially designed for use with Tinol. The Outfit No. 2 has a large tin of Tinol and the Lamp; the price is 2s. 6d., or post free 2s. 8d.—HANDICRAFTS LTD., 57, Farringdon Road, London, E.C.

Revolving Music Stool with Square Seat.

FOR a square-seated revolving music stool, such as we illustrate, mahogany will probably give the best result—with inlaid banding or lines in the back rail stained to a dark Chippendale or brighter Sheraton colour and polished. Waxed walnut and fumed oak would also look well. With regard to



REVOLVING MUSIC STOOL.
WITH SQUARE SEAT.

dimensions, the seat may finish 15 ins. by 14 ins. or 15 ins. square, framed up of 1 in. stuff 2 ins. wide, with a $\frac{1}{2}$ in. rebate to receive the loose upholstered seat pad. The seat framing can be mortised and tenoned together, or dowelled on. The pad frame ($1\frac{1}{2}$ ins. by $\frac{1}{2}$ in.) should be cross webbed and stuffed with wadding, alva, wool or horsehair. Height of seat from ground at its lowest should be 16 ins. to 17 ins., adjustable to an increased height by means of a patent screw action, obtainable for a moderate sum. Height of back can be 12 ins., or a trifle higher if specially required; back uprights, $1\frac{1}{2}$ ins. by $1\frac{1}{4}$ in. net, finished; shaped back, 2 ins., with a 5 in. wide and $\frac{3}{4}$ in. thick rail, rounded off at top to correspond. The supporting shaft can be turned up of 5 in. stuff, 12 ins., and will be much improved by reeding, etc., as indicated. The tripod splay legs should finish about 15 ins., toe to toe, each leg being cut and shaped from a piece 12 ins. by 3 ins. by $1\frac{1}{2}$ ins., including joints. These legs can be tenoned into shaft, or may be dowelled into position. A spring seat may be fitted with advantage, but is not altogether necessary.

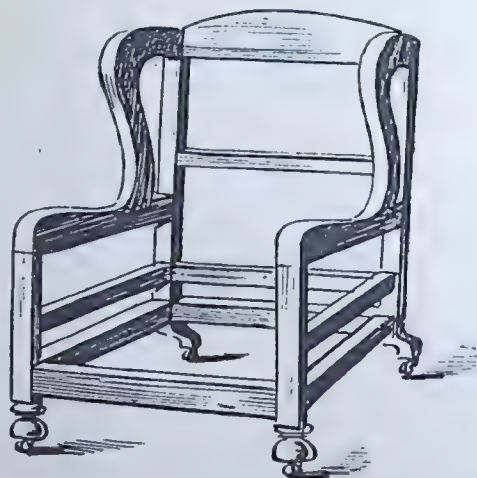
A Wing Chair Frame.

A WING CHAIR FRAME can be worked on a frame, such as that sketched herewith. With the exception of the front legs, which should be of oak, walnut, or mahogany, the whole of the framework can be of beech. The rails of the seat frame will be dowelled or mortised into legs which should be about $2\frac{1}{2}$ in. by $2\frac{1}{2}$ in. Width of chair seat across legs (over all) can be 2 ft. 4 ins., which will give 23 ins. clear between the arms for an ample size.

The height of frame may be between 2 ft. 11 ins. and 3 ft. 4 ins. (without castors) and of course the stature of the sitter has some bearing on the point, as also on the depth back to front over arms of 2 ft. 3 ins. to 2 ft. 8 ins. Stuff 2 ins. by 2 ins. will do for back, front, and side rails. Height to top of shaped arms can be 22 ins., and the widest part of the wings 12 ins.,

back to front, over all. Width of back is 2 ft. Most other parts can be of $1\frac{1}{2}$ in. by $1\frac{1}{2}$ in. stuff, and the upper back rail can be shaped from a piece 6 ins. wide. Height of front seat rail is about 5 ins. from ground. Square tapered feet may be fitted, or alternatively a turned ball, as shown, with the lower part hollowed out for sunk castor. With regard to the springing of the seat, so far as is possible these should rest in the centre of each opening made by the cross webbing. Place all the springs over the webbing in this way in the position they will occupy in the finished seat, sewing each spring with stitching needle and twine round the bottom at four points and tie off each spring.

If it is intended to spring-stuff the back all round, and also the tops of the arms, use the regular smaller sized springs for the purpose, 4 ins. or 6 ins. size, to rest upon the top of the stuffing rails to which they are fixed by staples firmly entered into the wood. To spring the lower part of front of chair,



WING CHAIR FRAME.

fit an extra stuffing rail and staple the springs over these. An extra stuffing rail across the back, midway, will be required to assist the fixing of the springs here, the back being webbed in the same manner as the seat. The *WOODWORKER* handbook on "Upholstery" would afford several good hints that would be useful for finishing such a chair.

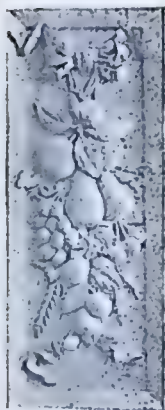
Design for Woodcarvers.

While a number of craftsmen have an elementary knowledge of drawing, few have practised it sufficiently to enable them actually to prepare their own designs. There are many who feel that this gift would, however, readily come if they had only some safe guide to direct them as to the basis and application of design. So far as woodcarving is concerned, the sixpenny handbook, "Design for Woodcarvers" (*WOODWORKER* series), meets the woodcarving craftsman's needs. It is not a book of designs, but a clear and simple guide which will help the comparatively inexperienced draughtsman to design or adapt patterns on which he may afterwards work. The handbook may be had for sixpence, or post free for sevenpence, from *THE WOODWORKER AND ART CRAFTSMAN*, 57, Farringdon Road, London, E.C.

Comments on Readers' Work.

Carved Fruit Panel.

H. R. (Melbourne, Victoria, Australia) is responsible for the carved panel, a photograph of which is here reproduced. It is, as will be seen, from one of our designs, and is carved in English oak. It was shown in a competition at Leominster, and gained the first prize. H. R. is an amateur, and has never had help save that given in the columns of *THE WOODWORKER*, which he has taken since it first appeared.



CARVED FRUIT
PANEL BY H. R.
(MELBOURNE).

We are glad to have the opportunity of commenting upon the work of another Colonial craftsman. We have many friends in the Colonies, and very warmly welcome their communications. The panel is a very fine piece of work, even without qualifying the comment by saying, even for an amateur. The cutting is clean and crisp, and we are very glad to note that the tool marks are left on. Many amateurs try to get the surfaces as smooth as tools will make them, thus rendering surfaces devoid of character and life. Here we have the tool marks giving freshness without being obtrusive. Grapes are always difficult to carve, and here there is a little trace of the usual angularity, due to an insufficient amount of cutting into the mass. Between the grapes, the wood should be cut away more. The vine leaf in the centre requires more surface treatment, but the whole panel is a decided success.

Carved Vine Panel.

B. C. (Chatham).—We are always pleased to see the photograph you enclose. The carved panel shows considerable skill in the use of tools, but the design itself is capable of improvement. The forcing of the stalk to take the unnatural bend at the top in the four instances shown is regrettable, and the centre leaf does not appear to have an adequate connection



CARVED PANEL BY B. C. (CHATHAM.)

with any of the stalks. There is a little want of softness in all the leaves, and this is accentuated by the hardness of the veining. The ground would have looked much better had it not been punched so evenly. Apart from these suggestions, there is much that is excellent in the panel, particularly the spirit which (so far as we can judge from the photograph), you have thrown into the modelling.

Carved Finger Plate.

R. N. (Manchester) sends a carved finger plate in dark walnut from a *WOODWORKER* design of March, 1911. The relief is properly kept low, and there are indications of some spirited carving. The stems are a little hard and flat, and the wood has been over-oiled. Finger plates do not require much in the way of finish. When fixed in position constant handling soon produces a nice dull-polished surface.

Mahogany in Canada.

The enormous increase in building operations throughout Canada has been instrumental in increasing imports into that country in products which, some fifteen or twenty years ago, could hardly be noticed in commercial statistics. Mahogany, for instance, is a wood which, half a generation ago, Canada had very little use for, one reason being that in the early growth of the country office buildings, houses and hotels were erected rather on a cheap scale. Mahogany in Canada has always been considered somewhat of a luxury, particularly for decorative purposes. To-day this feeling has somewhat changed, and mahogany is very generally used. That Canada is now commencing to build her own railway cars is another factor in the importation of mahogany. Although the greatest timber country in the world, the fact remains that no wood grown there can be used for manufacturing good cars. Hardwood in Canada is short grained, and it is difficult to get anything that will equal mahogany for durability and finish. Automobiles also require mahogany to be properly finished, and in the last five years large amounts of this wood have been imported by automobile manufacturers who have opened factories in Canada. The wealth of Canada, which has increased tremendously per head, naturally calls for more luxurious living. In the old days the best of furniture in the house might be made of any hardwood, or even pine, with a veneer finish, while now nearly everything must be mahogany.

Mahogany as a Furniture Wood.

It is safe to say that no other kind will ever supplant mahogany as the peer of all furniture woods. Manufacturers of high-grade furniture might as well close down their factories as to attempt to use unfamiliar woods. Mahogany has been the dominating wood for several hundred years and it will continue no doubt for as many years to come. Every man and woman has an almost hereditary taste for mahogany furniture. From the days of our great-grandfathers, when mahogany was as great a luxury as it is to-day, the instinctive love for the pleasing qualities of finish and figure has been dominant in the homes of the well-to-do. Those who have pieces of solid mahogany furniture prize them very highly, for mahogany has been the badge of luxury for many generations and as long as there are men and women to enjoy a beautiful home the peer of woods will hold indisputable reign.

Fretwork Outfits.

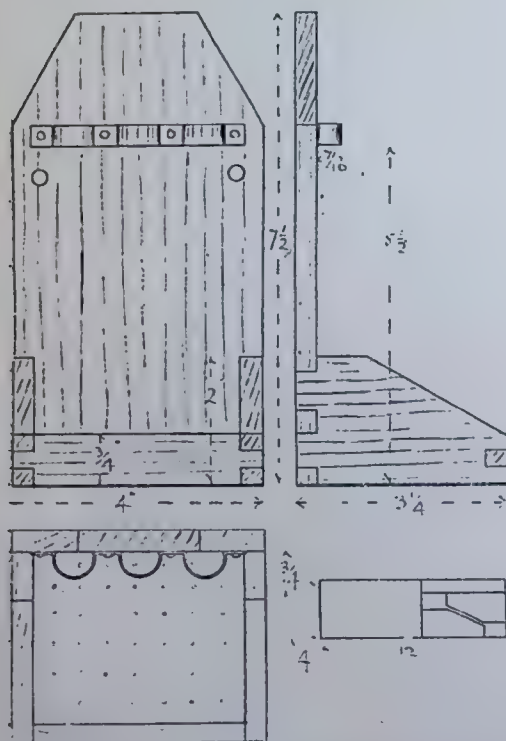
The *Handicrafts* 35. Outfit of Fretwork Tools is in every way suitable for the serious beginner. It contains 14-inch hand-frame with double tension screw, two dozen saw-blades in metal case, fretwork drill with six assorted bits in metal case, large beech-cutting table with two cramps, glasspaper, tube of liquid glue, one foot of fretwood, book of designs, and fretwork hand-book. Price, carefully packed and carriage free, 5s.—*HANDICRAFTS LTD.*, 57, Farringdon Road, London, E.C.

Manual Training.

A Simple Soap and Toothbrush Rack.

THE article shown in perspective at Fig. 2 contains some interesting work in wood and metal. The front and side elevations and the plan are given at Fig. 1, with the principal dimensions indicated.

Yellow deal may be used, and a piece measuring 12 ins. by 4 ins. by $\frac{3}{8}$ in. finished will be sufficient to make the wooden portion if it is set out as shown in the small scale sketch of the development at Fig. 1. The notched joint suggested is not difficult, and if the slots are cut before the small pieces are shaped as shown at Fig. 3 the work will be rendered much easier.



A Matchbox and Ash Tray.

The article shown at Fig. 5 is a simple piece of metalwork, requiring no special apparatus than what may be found in any Manual Training room. It will be seen that the work is much the same as the simple metalwork exercises described in previous issues, the only addition being the piece of strip metal which is bent to the shape and dimensions shown at Fig. 6, and soldered to the base. There is no necessity to occupy any space in giving detailed instructions as to the method of making it.

A Simple Pulley.

The small pulley shown at Fig. 7 in front and side elevation is an interesting piece of work, which may be made out of strip wood. The outside frame is 1 in. wide and $\frac{1}{4}$ in. thick, the two side pieces being 5 ins. long and joined together with two $\frac{1}{4}$ in. lengths of

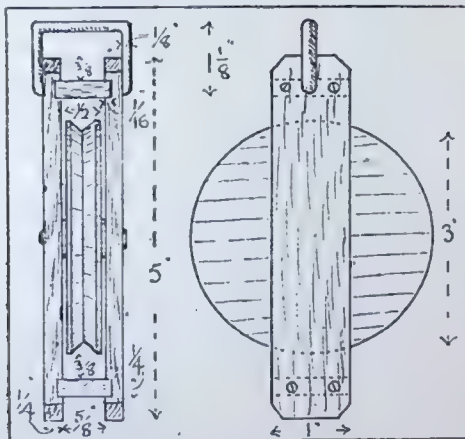


FIG. 7.—SIMPLE PULLEY.

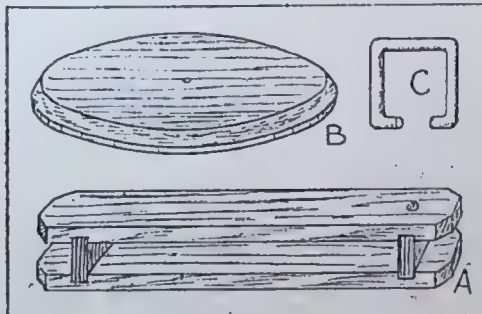


FIG. 8.—DETAILS OF WHEEL AND FRAME.

the same material. The grooves in the side pieces are cut 1-16 in. deep, and are $\frac{1}{4}$ in. from each end, as indicated at A, Fig. 8. The pulley wheel is made from two pieces of $\frac{1}{4}$ in. wood, first cut to a circle of 3 ins. diameter and then chamfered on one edge, as shown at B. The chamfer should be very carefully done; about 3-16 in. each way will be quite sufficient. The two pieces should be glued together with the grain in opposite directions, and placed under a heavy weight until the glue is set. Washers should now be cut out of a piece of thin sheet brass, and an ordinary French nail used as a pin, the end being lightly riveted over. The wire loop at the top should be bent to the shape shown at C, bent out a little at the ends, and

then fitted into holes bored in the top as shown. Various sizes may be made in this way, and will provide useful apparatus for the physics laboratory.

A Watch-Light.

To make a luminous bottle, or watch-light, place a piece of phosphorus the size of a pea into a long glass phial, and pour oil just as hot as the hand can bear carefully over it till the phial is one-third filled. The phial must be carefully corked, and when used should be unstopped a moment to admit the external air; then closed again. The empty space of the phial will then appear luminous, and give as much light as a dull ordinary lamp, and just sufficient to see the face of a watch. Each time that the light disappears, on removing the stopper it will instantly reappear. In cold weather the bottle should be warmed in the hands before the stopper is removed. A phial thus prepared may be used every night for six months.

Forthcoming Exhibitions.

We shall be glad if Secretaries will kindly send us early intimation of forthcoming Arts and Crafts Exhibitions.

Now Open. — Women's International Art Club.

Annual Exhibition, open till March 31, at the Grafton Galleries, Grafton Street, London, S.W. Exhibition includes a Section on Hungarian crafts.

March 13. — Trentham Home Arts and Industries Exhibition, to be held at Trentham Institute. Secretaries, Messrs. W. H. and H. W. Stevens, Hanford.

March 25 and 26. — Exhibition in Connection with Easter Conference of National Association of Manual Training Teachers, to be held at the London Day Training College, Southampton Row, W.C. Chairman of Exhibition Committee, Mr. A. C. Horth, 38, Foyle Road, Blackheath, London, S.E.

April 9 to 11. — Ripon Industrial Society's Exhibition (Woodworker Silver and Bronze Medals for Woodcarving.) Secretary, Miss L. C. Hay, 1, Princess Terrace, Ripon.

April 23 to 25. — Woodford Industrial and Art Society's Exhibition, to be held at the Lecture Hall, Woodford. Secretary, Miss Brothurst, 20, Bryanston Mansions, York Street, London, W.

May 15 to 17. — Oxford Arts and Crafts Exhibition, to be held in the Town Hall, Oxford. Secretary, Mrs. Parker, Alverstoke, Ifley Road, Oxford.

May 28 and 29. — Essex Handicrafts Association Exhibition, to be held at Winter Garden, Clacton-on-Sea. Joint Secretaries, Miss Edith Newman and Miss Hilda Ackers Bank Chambers, Clacton-on-Sea.

June 14 to 17. — Wakefield Arts and Crafts Exhibition, to be held at Temperance Hall, Carlton. Secretary, Mr. J. W. Spright, Carlton. Wakefield.

Oct. 13 to 18. — Sunderland Arts and Crafts Association Exhibition, to be held at the Victoria Hall, Sunderland. Secretary, Mrs. Gordon Bell, St. Bede's, Sunderland.

Panelling.—III.

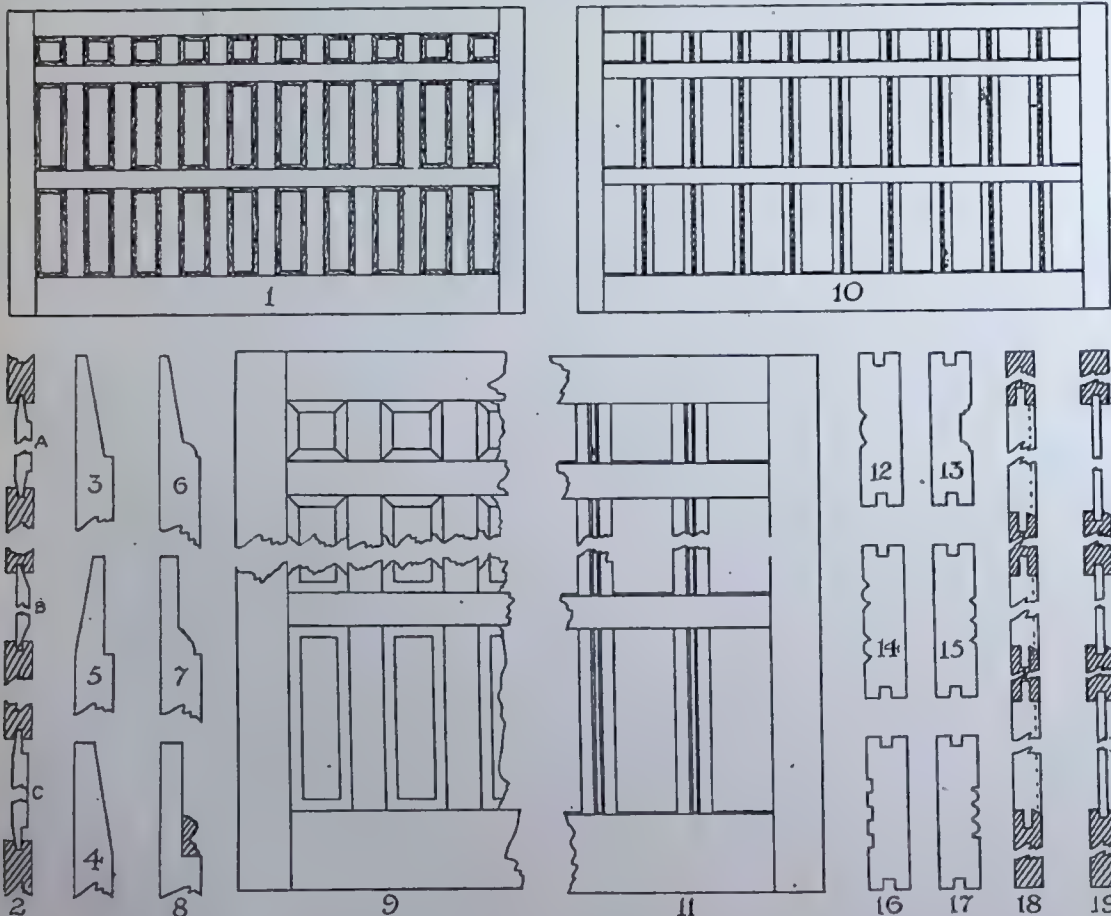
Raised Panels and Moulded Muntins.

RAISED panels in any kind of panelling will be found to give a good effect whether used on doors, on a staircase, to cover a blank wall, or as a dado. The elevation in Fig. 1 represents a complete piece of panel work, 10 ft. long by 6 ft. high, the bottom rail being 9 ins. wide, the stiles and top rail 6 ins. wide, and the muntins and inside rails 4 ins. The panels are 7 ins. wide, and the rails are so spaced that the top panels are square, and the remaining two equal in height.

the same width when fixed; neglect of this will spoil the effect of the finished work.

The method of setting out, mortising and tenoning the various pieces will be the same in this style of panelling as described before; therefore we can pass this over as finished and show how the panels should be prepared, this being the only important part to be dealt with.

Each panel should be cut to the size required, which will be the height and width of the openings, plus the depth of the two grooves. These grooves, if soft wood is being used, should be $\frac{3}{4}$ in., or for hard wood 5-16 in. In squaring off and gauging to width, the panels should be made slightly less in both length and width than the actual size



DETAILS OF RAISED PANELLING. FOR PARTICULARS SEE NEXT PAGE.

By having the stiles and top rail somewhat wider than the inside rails and muntins in a large piece of panelling such as this, an idea of strength is given without a too solid appearance of plain wood, which would be the case if the inside members were made too wide. If a complete room were being panelled, care should be taken in the setting out to ensure that the stiles all appear

required, so as to be quite safe against panel binding when putting together.

Each panel should be faced up; that is, planed straight and true on the best side. All may be gauged to an even thickness or not as preferred. If the panel will be seen on both sides gauging is advisable.

Before commencing to "raise" the panels,

which really means sinking the outsides, it must be decided as to what form the raised part has to take. Fig. 2 shows three different styles in position:—A, bevel and square; B, bevel only; and C, flat and square. The sections of each of these are shown in Figs. 3, 4 and 5 respectively; while in Figs. 6, 7 and 8 we show three other styles, bevel and moulded, flat and moulded, and flat with mould planted round. For panels of the width we are now dealing with (7 ins.) the sunk portion may be $1\frac{1}{2}$ ins. plus the part which fits into the groove, whether the style is as Fig. 3, 4 or 5.

Fig. 4 is, of course, the easiest to do. The only thing to be careful about is to bevel off to the same thickness round the edges, and to make the bevels so that the angles appear as though they are mitred, as in the elevation, Fig. 9, upper part.

To Fig. 3 the same applies. Fig. 5 will not show an angle at all, but will appear as the lower part of Fig. 9. The sink of these two latter should be about an eighth of an inch—not more, or they will appear clumsy. The other three styles (Figs. 6, 7 and 8) must be sunk sufficiently low to allow of the moulding being worked in the two first, and in the last to leave space for the planting in. In making the sinkings, always do across the ends first; that is, across the grain. The shoulder may be sawn in with a fine saw, but take care not to cut too deep. In the case of the moulded sinkings, work them out square at all four sides first; then mould them, the cross grain first. By doing this any splitting away at the outside will be cut off in doing the sides, thus leaving clean corners, which would be practically impossible if the sides are done first.

If the panels are gauged to thickness, they will appear as Figs. 3 and 4, and the sinking must be worked so that they will fit the grooves. If no gauging is done they will have to be mulleted to fit the grooves, thus making them as A and C in Fig. 2, and as section Fig. 5.

We will now deal with the alternative style of panelling shown in Fig. 10, in which the panels are quite plain, but the muntins are ornamented. This method was much used in olden times, and will be found in genuine old panelling. The effect is good and the extra labour very little. Fig. 11 gives enlarged details of the ornamented muntins, while Figs. 12 to 17 inclusive give sections of various styles, all of which have been used by the writer with good effect. Of these the easiest to do are Figs. 12 and 15, each of which can be done without special tools. By running heavy gauge-lines down the wood, and enlarging with chisel, they can then be finished with glass paper. Figs. 14 and 17 may be done in the same way, but the extra number of members will make them more difficult. Fig. 13 will need a small ovolo plane for the moulding after the groove is made, while Fig. 16 needs a plough. These grooves, as well as the main groove in Fig. 13, may be made by gauging heavily, cutting out roughly with the chisel, and finishing with a router made by inserting

a narrow chisel in a block of wood at an angle of thirty degrees. By finishing in this way the work will resemble antique far more than if it were done by means of high class tools.

The upper edge of the bottom and inside rails in this kind of work should be bevelled, the idea being to prevent the dust lying on it. Though it does not do this entirely, it certainly gives the panelling a more handsome appearance. The bevel should be taken into the panel, and of course the shoulders of the muntins must be cut to fit, as in Figs. 18 and 19, which show sections through the muntins and panels respectively. The dotted line in the former represents the sunk part of the muntin.

All shoulders should be partly cut before the moulding is worked, but not cut right off. This ensures a clean cut in the moulded part, and also no faulty ends. Although the panels are shown parallel in thickness in Fig. 19, they may be mulleted at the back to suit the grooves. If three-ply oak is used, however, the grooves will be made to suit the thickness.

The putting together of each of these styles does not differ in the least from that which has been described before, therefore, the methods need not be repeated.

(To be continued).

EXPLANATION OF DIAGRAMS.

- | | | |
|------|-----------|--|
| Fig. | 1. | Elevation of raised Panelling. |
| " | 2. | Sectional detail showing various styles of Panels. |
| " | 3. | Section of bevel and square Panel. |
| " | 4. | Section of plain bevel Panel. |
| " | 5. | Section of flat and square Panel. |
| " | 6. | Section of bevel and moulded Panel. |
| " | 7. | Section of flat and moulded Panel. |
| " | 8. | Section of flat and planted-in Moulding. |
| " | 9. | Elevation of bevelled (upper part) and flat (lower part) raised Panelling. |
| " | 10. | Elevation of Panelling with moulded Muntins. |
| " | 11. | Larger detail of part of Fig. 10. |
| " | 12 to 17. | Various sections of moulded Muntins. |
| " | 18. | Vertical section of Fig. 10, through Muntins. |
| " | 19. | Vertical section of Fig. 10, through Panels. |

Manganese Ores.

The principal use of manganese ores is in the manufacture of iron-manganese alloys, such as spiegeleisen, ferro-manganese, silverspiegel, and silico-manganese. The first two of these contain principally iron and manganese; the last two contain considerable silicon in addition. Ferro-manganese and spiegeleisen are used in steel manufacture as reducers of iron oxide during the final melting, as recarburizers, and in the manufacture of special steels alone or in combination with chromium, nickel, tungsten, and other steel-hardening metals. Manganese is also used in the formation of alloys with copper, aluminium, zinc, tin, and other metals.

FRETWORK.—Messrs. Handicrafts Limited, 57, Farringdon Road, London, E.C., offer to send a large Fretwork Design and an Illustrated Catalogue to any reader who sends his name and address to them.

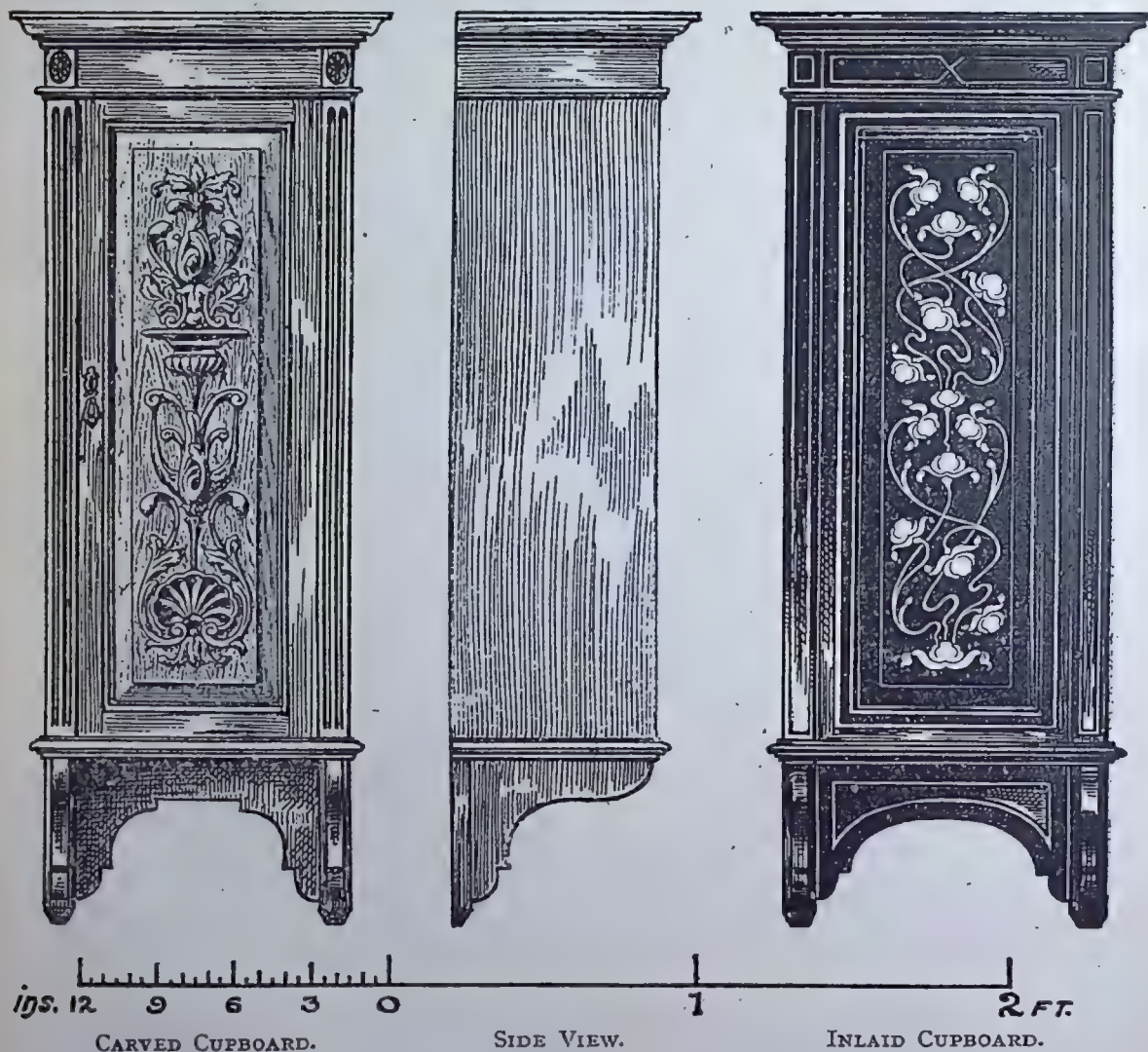
Design Suggestions.

Carved or Inlaid Wall Cupboards.

BELOW are two suggestions for utilising the carved and inlaid panel designs given on this month's Supplement. Both are similar in size and general style, but the inlaid cabinet

may be $\frac{3}{8}$ in., the frieze $1\frac{1}{2}$ ins., and the cornice $1\frac{1}{2}$ ins. The pilasters may have two stopped flutes, and small pateras may be carved on the return parts of the frieze.

The cupboard bottom may finish $\frac{3}{4}$ in. The brackets ($\frac{3}{4}$ in.), back posts ($\frac{3}{4}$ in.) and apron piece ($\frac{1}{2}$ in.) will give no trouble.



may be kept a trifle lighter than the carved one. The total length will come out at 3 feet, the width over the carcass being 12 ins., whilst the carcass depth may be $7\frac{1}{2}$ ins. or 8 ins. Of course the size is determined by the panel, and (in the case of the carved cupboard) if this is taken as 1 ft. $10\frac{1}{2}$ ins. by 6 $\frac{1}{2}$ ins. between the door mould the door itself can be 2 ft. $1\frac{1}{2}$ ins. by 9 $\frac{1}{2}$ ins. The door framing will be $1\frac{1}{2}$ ins. by $\frac{7}{8}$ in., with a simple moulding. For the pilasters $1\frac{1}{4}$ in. will do. The frieze mould

The inlaid cupboard will be carried out in mahogany. The door will be the same as in the other case, but with a box or satinwood line on the panel and a $\frac{1}{4}$ in. band on the frame. The frieze, pilasters and apron piece will also have lines, and a broad band may be inlaid on the front shaped edges of the bracket. The colouring of the door panel should be kept soft.

Hung in a recess either cupboard will have a very handsome appearance.

Recent Books on Arts, Crafts, &c.

The Studio.

One of the most interesting articles in the January *Studio* (One Shilling) is a review of the Arts and Crafts Society's Exhibition at the Grosvenor Gallery, which remained open till January 28th. To this a dozen pages are given, and the five-and-twenty or thirty photographic illustrations convey a good idea of the representative character of this season's exhibition. *The Studio* is noted for its care in the selection and preparation of illustrations, and a full-page plate of the Etonian's "Roll of Honour" is well worth some study. This is a volume containing the roll of Etonians who served in the South African war, the binding (in red and gold) designed by Douglas Cockerell and executed by E. W. March and J. Izzard, all of Messrs. W. H. Smith and Sons' bookbinding workshops. Furniture has been less prominent this year at the Arts and Crafts Exhibition, but there was a good display of jewellery, several examples being shown in *The Studio*. Other features of the January number are studies of the paintings of Philip Connard and W. Elmer Schofield, and some recent designs in domestic architecture. In connection with the brief account of a recent exhibition of wood carvings at Tokyo we could well have liked to have seen a full-page illustration of the spirited wood-sculptured figure, "Hotei," by the Japanese carver, Ishimoto Gyokai. There is a beautiful full-page coloured reproduction of a chalk drawing, "At Kortenhoef," by H. Wismuller. (*The Studio*, Ltd., 44, Leicester Square, London, W.C.)

William Morris.

The Fabian Society have just issued (price twopence) a biographical tract sketch of William Morris. Although necessarily dealing chiefly with the development towards socialistic ideals, the sketch throws interesting light on Morris's life as designer and workman. (Fabian Society, 3, Clement's Inn, London, W.C.)

The Imprint.

A new monthly magazine, *The Imprint* (one shilling) has now made its appearance. It is devoted to the printing and allied trades, and is to deal with such subjects as book and periodical printing, type-founding, stereotyping, wood engraving, process-block making, electrotyping, lithography, etching, book-binding, illuminating, pen and wash drawing for reproduction, etc. The magazine is beautifully produced. (*The Imprint* Offices, 11, Henrietta Street, London, W.C.)

Artists' Materials.

Messrs. George Rowney and Co., 61, Brompton Road, London, S.W., the well-known manufacturing artists' colourmen, pencil makers and art publishers, have sent us their new catalogue for 1913-14—a fully illustrated volume of nearly three hundred pages. Rowney's colours (water and oil), their brushes, pencils and artists' materials generally are too well known to need any recommendation from us. Many new features appear in this catalogue, among these being outfits for Pen-Painting (the revival of an old art), outfits for Stencil-Painting, new series of water colour boxes, several new colours—the latter including a delicate

"lapis" grey, prepared from the lapis lazuli mineral. The catalogue forms an admirable reference book for art workers.

Imperial Arts League.

The *Journal* of the Imperial Arts League for January (Sixpence) has an interesting article on art criticism in the press. (Imperial Arts League, 15, Great George Street, Westminster.)

Cleaning Rusted Iron.

A simple and effective way of cleaning rusted iron articles consists in attaching a piece of ordinary zinc to them, and then letting them lie in water to which a little sulphuric acid is added. They should be left immersed for several days, or a week, until the rust has entirely disappeared, the time depending on how deeply they were rusted. If there is much rust a little sulphuric acid should be added occasionally. The essential part of the process is that the zinc must be in good electrical contact with the iron. A good way is to twist an iron wire tightly around the object and connect this with the zinc, for which a remnant of a battery zinc is suitable, as it has a binding post. Besides the simplicity of this process, it has the great advantage that the iron itself is not attacked in the least as long as the zinc is in good electrical contact with it. When there is only a little rust a galvanised iron wire wrapped around the object will take the place of the zinc, provided the acid is not too strong. The articles will come out a dark grey or black colour, and should then be washed thoroughly and oiled. The method is specially applicable to objects with sharp corners or edges, or to files or other objects on which buffing wheels ought not to be used. The rusted iron and the zinc make a short circuited battery, the action of which reduces the rust back to iron, this action continuing as long as any rust is left.

Working in Hard Woods.

How much do workers in wood know of the timber on which their tools are exercised? Experience gives them a certain superficial knowledge of the particular woods they are accustomed to use, but beyond this they often know little. An understanding of the structure, growth and qualities of woods would, however, open up for them a new field of enterprise, and might probably direct them into paths of progress which they had never dreamed were open to them before. It is for this reason that *THE WOODWORKER* handbook, "Hard Woods—English and Foreign," was prepared. Of the better-known woods described are English, American, African, Baltic and other oaks, the various species of mahogany, walnut, beech, ash, plane, elm, birch, sycamore, maple, holly, rosewood, satinwood, teak and padouk. Of varieties less used by the ordinary woodworker, pear, box, cherry, hazel, amboyna, tulip, ebony, lignum vitae, hickory, olive, greenheart and sandal are dealt with; whilst rarer woods, such as kingwood, coromandel, snake, purple, partridge, lance, fustic, acacia, etc., are described. The details as to structure, seasoning, cutting grain, etc., are most valuable, and even to the home worker in a small way the handbook is one that will give a much clearer idea of the materials upon which he works. The price of the handbook is sixpence, or it may be had post free for sevenpence, from *THE WOODWORKER AND ART CRAFTSMAN*, 57, Farringdon Road, London, E.C.

"Handicrafts for Boys."

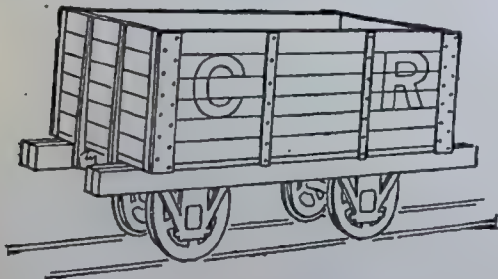
Contents of First Volume.

THE twelve monthly issues of this magazine "Handicrafts for Boys" during the past year have now been strongly bound in limp cloth covers. For the boy this volume is "a library in a book," while the manual training teacher will find in it some exceedingly useful and interesting articles very suitable for class work. Almost all subjects which come within the sphere of "Handicrafts" and which are of interest to boys generally are dealt with from time to time. The Articles are all interesting and practical, and the instructions are simple and sufficient.

Among subjects upon which articles have appeared in the present volume we name the following as being of special interest:—

Light Woodwork.	Fretwork.
Boot Repairing.	Nature Notes.
Picture Framing.	Air Balloons.
Toy Making.	Signalling with Flags.
Elementary Electricity.	Cardboard Work.
Photography.	Envelope Making.

The Volume contains Illustrated Articles describing how to make numerous things, all well within the scope of the average boy's ability.



MODEL OF RAILWAY WAGON.
(See March *Handicrafts for Boys*.)

To boys with a particular inclination towards model making, and to woodwork instructors, the series of articles upon working models made from wood will have a special appeal. As the most interesting models we have selected the following:

Copper Printing Press.	Windlass.
Power Hammer.	Crane.
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The volume for the first year of its publication contains nearly 200 pages profusely illustrated, and costs only 1s., or post free 1s. 3d. The subscription for a single copy monthly for one year is 1s., while two copies monthly for one year will be sent for 1s. 6d. A specimen copy may be had for 1d. post free, from Handicrafts Limited, 57, Farringdon Road, London, E.C.

The Woodworker and Art Craftsman, Volume XVI.

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Contributions.—The Editor invites correspondence and original contributions on all subjects relating to woodwork and other handicrafts. All MSS. should be accompanied by a stamped and addressed envelope for return if unsuitable.

Books for Review, price lists, tools, materials, etc., sent for inspection, enquiries and all correspondence relating to the literary portion of the Magazine should be addressed to the Editor.

Editorial Address: "The Woodworker and Art Craftsman," 57, Farringdon Road, London, E.C.

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Advertisement Rates.—These may be had on application to the Advertisement Manager. All correspondence relating to Advertisements to be addressed to THE ADVERTISEMENT MANAGER, "The Woodworker and Art Craftsman," 57, Farringdon Road, London, E.C.

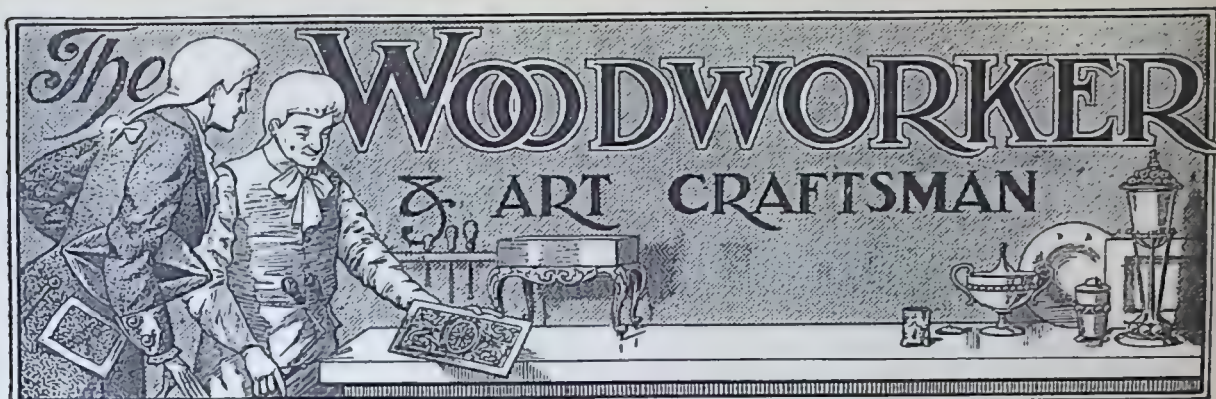
PUBLISHING NOTICES.

Subscriptions.—"The Woodworker and Art Craftsman," with Design Supplement, will be sent post free to any address in the Postal Union for 4s. per annum, payable in advance. Remittances should be made by postal order and addressed to the Publishers.

Designs.—"The Woodworker and Art Craftsman" Design Supplements may be had FREE with the current number of the Magazine for one month only. They are not given away with back numbers, but may be had separately, price Sixpence each.

Publishing Correspondence relating to sales of the Magazine, subscriptions, etc., to be addressed to the Publishers, "Woodworker and Art Craftsman," 93, Long Acre, London, W.C.

See *Home Handicrafts* (One Penny) for January and February for article on "How to Build a Doll's House."



VOL. XVII, No. 232,

APRIL, 1913.

DESIGN FOR THE MONTH.

Carved Smoking-Room Table.

THE table illustrated here—primarily intended for the smoking room—is one that will be suitable for almost any room or for the hall. The full-sized details are given on the Supplement which accompanies this issue, and from these the cabinet work and carving may be proceeded with direct.

The table stands 28 ins. high, and has a top $15\frac{1}{2}$ ins. square. One of the principal features is the leg with inverted taper, but the whole table is well proportioned, and will make a handsome ornament. The carved parts are the top (border only: see Fig. 10), the wide rails under top, and the narrow rails or shelf. Obviously, the most suitable wood to use is oak, but dark walnut may be chosen if other furniture has to be matched.

If the worker goes in for carving only, and requires to have the table made up elsewhere, he should be careful in cutting his wood to allow a little margin in length and width for fitting. This does not apply to the top, which may be finished as shown, but the carved rails will be tenoned to the legs. Quite apart from the carved work, the table is an interesting piece of furniture to construct, and—as will be explained later—a perfectly plain table may, with very slight alteration, be made by those who go in for home cabinet work without carving.

The top is $15\frac{1}{2}$ ins. square and $\frac{5}{8}$ in. in thickness. The corners are cut off, as Fig. 3, the angle part showing 2 ins. The top edge is chamfered $\frac{1}{4}$ in., and there is a plain wood border $1\frac{1}{4}$ in. wide. Inside this is the carved border, $1\frac{3}{4}$ in. wide, leaving a plain centre of 9 ins. square. The carving in the ornamental border must be kept very low. If the ground is taken down $\frac{1}{8}$ in. this will be sufficient, and as a consequence no attempt should be made at elaborate modelling. If the top is jointed up great care should be taken to have the grain even and regular.

The legs should be cut $27\frac{1}{8}$ ins. in length; this allows for a short tenon ($\frac{1}{4}$ in.) to enter the top.

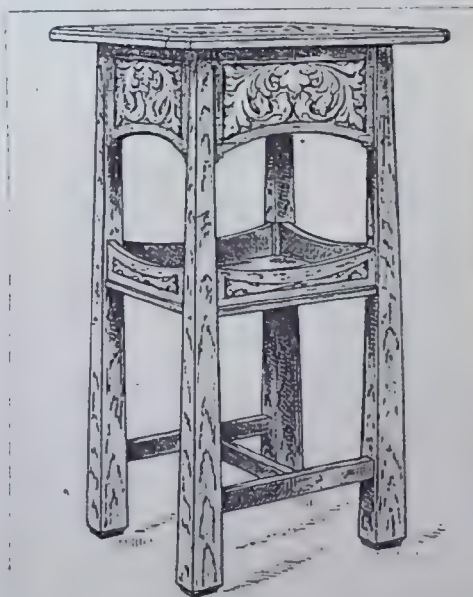


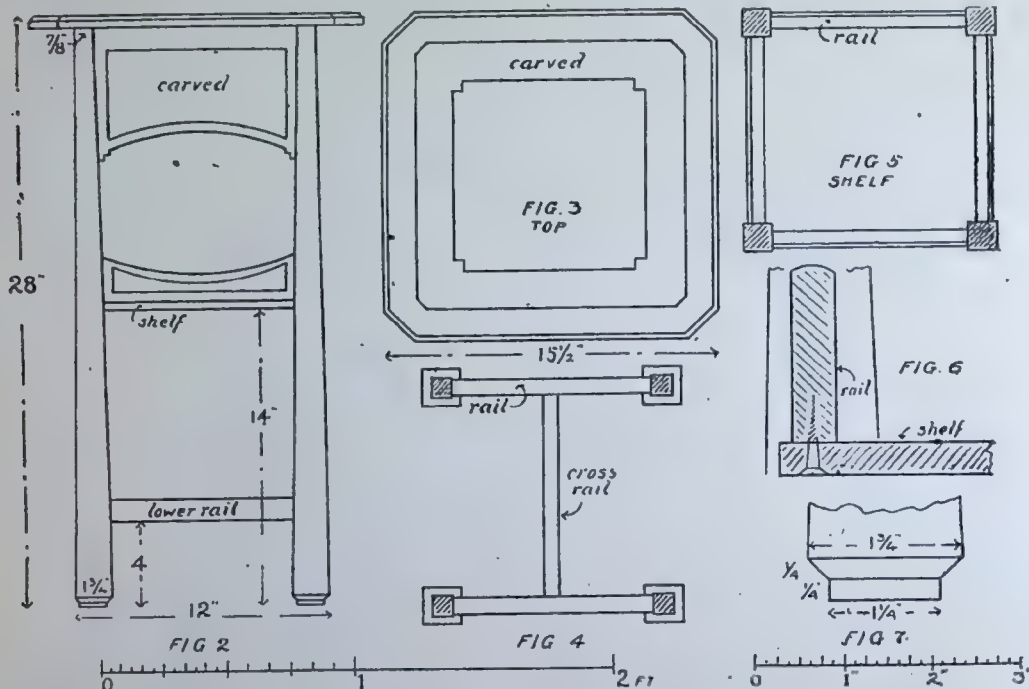
FIG. 1.—CARVED SMOKING ROOM TABLE,
28 INS. HIGH, BY $15\frac{1}{2}$ INS. OVER TOP.

They are $1\frac{3}{4}$ in. square at the floor, tapering to $\frac{7}{8}$ in. square at the top. On no account should the greater thickness exceed $1\frac{3}{4}$ in., but if the taper is taken uniformly on all four sides to $\frac{7}{8}$ in. the leg will not look too heavy.

The total width over the legs at the floor is 12 ins., and at the top $11\frac{1}{8}$ ins. Each leg is mortised

on the two inner faces for the tenons of carved rails; each is also mortised on *one* inner face to take the tenons of lower rails. The legs may be

The wide carved rail below the top is $9\frac{1}{4}$ ins. between the legs and $6\frac{1}{4}$ ins. deep. As the relief here may be higher the thickness should be $\frac{1}{2}$ in.



Scales for Figs. 2, 3, 4 and 5.

Scale for Figs. 6 and 7.

FIG. 2—ELEVATION OF TABLE. FIG. 3—OUTLINE PLAN OF TOP. FIG. 4—PLAN AT LOWER RAILS. FIG. 5—PLAN AT SHELF. FIG. 6—SECTION OF SHELF AND RAIL. FIG. 7—DETAIL OF LEG AT BOTTOM END.

left flat at the foot, or may be finished as shown in Fig. 1, and in detail at Fig. 7. This alternative finish, which will not be found troublesome, is recommended.

The lower rails (see Figs. 2 and 4) are $1\frac{1}{2}$ in. deep and $\frac{3}{4}$ in. thick. From floor to underside of rail is 4 ins., and at this height the rail will show approximately $8\frac{5}{8}$ ins. between the legs. An extra $\frac{1}{2}$ in. must, however, be allowed at each end for tenons to enter legs. The cross rail (Fig. 4), which is tenoned to the two side rails, will show $9\frac{1}{2}$ ins., and may in the first instance be cut $10\frac{1}{2}$ ins.

From floor to underside of shelf is fixed at 14 ins. The shelf itself will come out at $11\frac{1}{4}$ ins. square, and may be $\frac{3}{4}$ in. thick. It is cut away about $1\frac{1}{8}$ in. by $1\frac{1}{8}$ in. at each corner to fit the legs, and stands in about $\frac{1}{8}$ in. from outer face of leg.

The shelf rails are 9 ins. between the legs (allow, say, 10 ins. on account of tenons), and are $2\frac{1}{4}$ ins. wide at the ends, and $1\frac{1}{4}$ in. wide at the middle. A thickness of $\frac{1}{2}$ in. will be ample, as the little carved detail need only be in low relief. The rails are tenoned to the legs, and the shelf screwed to the rails from below. In Fig. 5 the outer line indicates plan of shelf, whilst the two inner lines denote the rail.

net. The rail is tenoned with two tenons at each end to the legs, and is set back about 3-16 in. from face of legs. The carving is kept well down from the top in order that it may not be over-shadowed. It might here be mentioned, however, that the table might well be given an inch more in height, in which case the rail below top might be increased $\frac{3}{4}$ in. in depth—the extra $\frac{3}{4}$ in. being added to the plain space between carving and top. The odd $\frac{1}{4}$ in. might be added between the two carved rails.

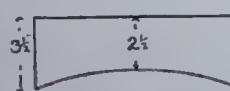


FIG. 8.



FIG. 9.

ALTERNATIVE RAILS IF A PLAIN TABLE IS MADE.

The carving of the upper rail may have a relief of about 5-16 in. The ornament here permits of some good modelling. A fairly bold effect should be aimed at, but by this we do not mean that a lack of finish is permissible. Although the carving may be partly hidden from the view of any one

standing beside the table it will be prominent to a person seated near it.

The top is mortised to receive the short tenons of the legs, and is held secure by glued blocks fitted inside at the angles of top and rails.

To make a table of this character without any carved work, the only alteration required in the design is to vary the middle and top rails. Without carving to relieve them, wide rails would appear needlessly heavy. For the top a plain rail $2\frac{1}{2}$ ins. or 3 ins. deep would do, or a shaped rail like Fig. 8— $3\frac{1}{2}$ ins. deep at ends, and $2\frac{1}{2}$ ins. at the middle—might look better. Similarly, a straight shelf rail $1\frac{1}{4}$ in. deep could be taken; or, to match Fig. 8, a shaped rail as Fig. 9, $1\frac{1}{2}$ in. deep at ends, curving to 1 in. at the middle, would be suitable. The table otherwise would be as described.

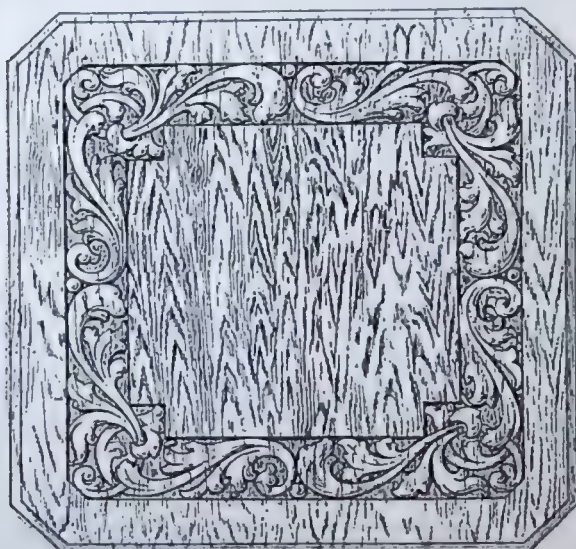


FIG. 10.—SHOWING THE CARVED TOP OF TABLE.

For a table of the sort a dull finish is preferable to French polishing.

Note.—THE WOODWORKER AND ART CRAFTSMAN design Supplements may be had free with the current number of the magazine for one month only. They are not given away with back numbers, but may be had separately, price sixpence each.

Waste Nails.

Always bend nails down or remove them before throwing boards aside. Many serious injuries result in stepping on protruding nails.

Specific Gravity of Wood.

A study has been made by the American Forest Service of a number of different species of wood to determine the specific gravity of the actual wood substance. Results obtained thus far show it to be from 1.5 to 1.6, the variation among species being comparatively small.

Manual Training.

Hints for the Manual Training Teacher's Examinations.

IN the course of a few weeks the City and Guilds of London Institute will be holding their annual examination for the Manual Training "Woodwork" Teacher's Certificate. During the past year many readers desirous of improving their positions

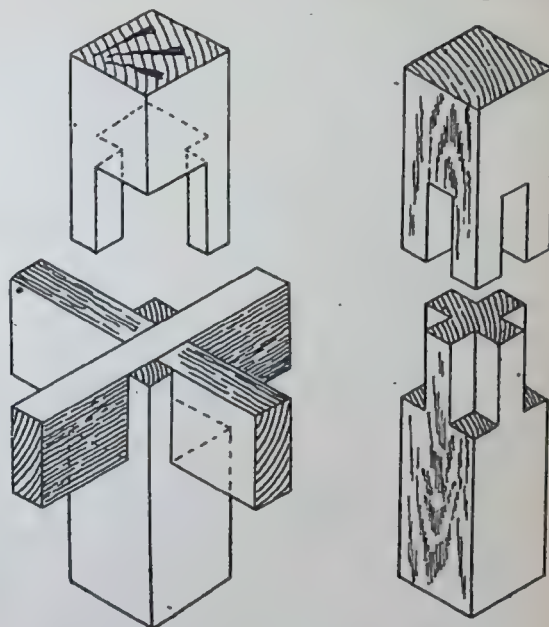


FIG. 1.
TWO INTERLOCKING JOINT EXERCISES.

have written to us for particulars of these examinations and it is evident that a great number intend sitting for the certificate. We illustrate here five woodwork joints, and intending students should make themselves

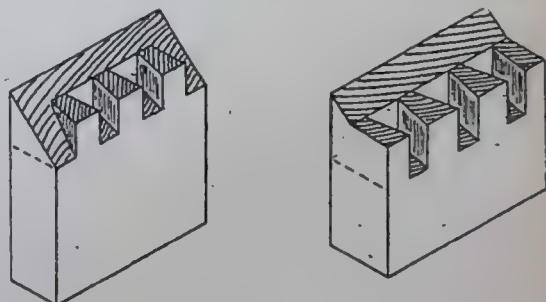


FIG. 3.
MITRE (SECRET) DOVETAILED JOINT.

thoroughly acquainted with these examples, as they do not appear in the ordinary text books on the subject, neither have questions as yet been asked upon all of them.

No. 1 shows an interlocking joint. The two cross-pieces are first halved together and the upright pieces,

which measure 3 in. by 3 in., are cut away so as to form an interlocking joint.

No. 2 is an example of another interlocking scarf joint, which requires very accurate craftsmanship to make a perfect model.

No. 3 shows a sketch of a mitre dovetailed (or as it is often called, a secret dovetailed) joint; in this example the sketch shows the pin portion only. It will be noticed that the edges are mitred so that when the joint is fitted together it appears to be a simple mitred joint.

No. 4 shows one-half of a similar joint, except that the outside edges are not mitred, and consequently when glued up the edge shows a combination of rebate and mitre.

No. 5 is an interlocking scarf joint, seldom met

Remember that questions quite apart from woodwork are occasionally asked. Here are a few that have appeared. - Write what you think on the following:—Votes for women. Ideal qualifications of a Manual Training teacher. Apply by letter for a position as an Instructor. Write on any book you have read; it must not be a novel. Write any fairy tale you know suitable for children.

PRACTICAL WOODWORK EXAMINATION.—Do not rely on other people to sharpen your tools; be there early and see that they are in working order and to your liking. Take any model you like first; it is not necessary to make them in the order given. Make the model with the most labour in it last, because you may not (we might even go so far as to say you *will not*) have time to finish them all.

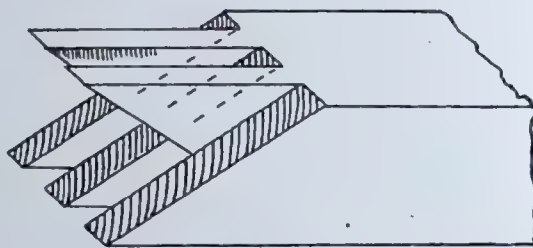
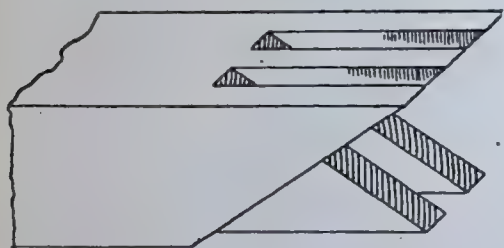


FIG. 5.—INTERLOCKING SCARF JOINT.

with except in the Manual Training class-room. It requires careful setting out and very accurate sawing and paring to make a success of it.

Students will find that these examples are well worth making, and give good scope for a series of drawing exercises. Plans, elevations, end views, isometric and oblique views, and sections on the oblique plane should be carefully studied. Our *WOODWORKER HANDBOOK*, "Woodwork Joints" (7d. post free) gives several other excellent examples with which the student should make himself thoroughly acquainted.

A few hints may be appended:—

DRAWING EXAMINATION.—Transparent xylonite set squares are preferable to the wooden variety; when in use the lines underneath the square are plainly visible and any tendency to get on the wrong line is greatly lessened. Two pairs of pencil compasses and two pairs of dividers save a great amount of time, as frequent alterations in setting are not so necessary.

Be at the examination early; take your own T-square and test the drawing board you are going to use. Do not forget to have a few extra drawing pins with you. A small piece of No. 6 glasspaper, the size of a five shilling piece, is an excellent medium for sharpening and keeping a knife-like edge upon your drawing pencils, and it saves dirty hands. Be sure to plainly number your answers to the drawings. Three ordinary pins and a yard of cotton should be taken to the examination. These are useful for an ellipse. Rough out your drawing before starting work, otherwise you may find you have given yourself insufficient room to develop the various sections asked for. Remember that two-thirds of the examination paper neatly and correctly done is worth the whole of the paper badly done.

LITERARY EXAMINATION.—Composition, spelling and punctuation are great features.

Let your work be exactly to the measurement asked for, and see that every piece bears your examination number. Take a yard of twine in your pocket to tie together the various parts of your models when finished. No sandpaper or file is allowed.

Remember the trammel method of drawing an ellipse. A piece of cardboard, 12 ins. long by 1 in. wide, may be used as a trammel, but you will have to provide it. A good test for shaped work is to lay it on the bench top and run your pencil around the edge; then turn the timber upside down and again run your pencil round the edge. If both sides are the exact shape of each other the pencil lines will coincide.

A Wonderful Moulding Plane.

One of the most interesting of woodworking tools is the well-known "Stanley Universal Plane." When we say well-known, we mean known well by name, for a comparatively costly tool—no matter how useful—is a luxury that every woodworker cannot afford. Provided with transverse sliding arms, fences, depth gauge and numerous adjustments, it will cut beads, reeds and round rods; it will plough and tongue; it will run the scotia, ogee, reverse ogee, ovolo, beaded scotia, Grecian ogee, and other mouldings; it will cut hollows and rounds, plain and other chamfers, angle beads, grooves, etc. In fact, for all moulding, matching and ploughing, it is a tool which, in the hands of an intelligent worker, is truly universal. But the tool itself is a study and an education, and in *THE WOODWORKER SIXPENNY HANDBOOK*, "How to Use the Stanley Universal Plane" (80 pages and over 100 illustrations), not only is the mechanism explained, but the reader is shown clearly how to use it for all purposes—and more—enumerated above. To those who already possess the plane this handbook is indispensable. To those who do not it will prove what a remarkably good investment the Stanley Universal can be. The Handbook may be had post free for 7d.

A Cheval Screen.

With Alternative Design.

A DULL or uninteresting corner in the best room may often be made interesting by the introduction of a cheval screen such as is suggested by these sketches, whilst for the purpose of masking the proverbial ugliness of the register stove there is nothing better. There is not much that is difficult in the way of construction, but care must be taken throughout to shoot the stuff clean and true and cut the joints to fit. Mahogany or walnut is a suitable wood, the former stained to a Chippendale colour and dull polished, the latter fumed and waxed. Either bass or birch might be used as a substitute and stained or finished an enamelled white.

Taking Fig. 1, dimensions may be put at 2 feet by 3 feet 3 inches high. For the framing, two uprights (A, Fig. 3) will be required, 3 feet 3 inches long, $\frac{7}{8}$ inch by $\frac{7}{8}$ inch, to be finished with a short tenon at top and mortised for entry of pediment, rails, and shaped feet below. The cappings (B) can finish 2 $\frac{3}{4}$ ins. by 2 $\frac{3}{4}$ ins. by $\frac{3}{4}$ in. or $\frac{5}{8}$ in. thick, moulded as shown, and mortised for tenons on uprights to enter. The caps may be dowelled in, but unless they are also nailed there is always a tendency for them to twist in course of wear.

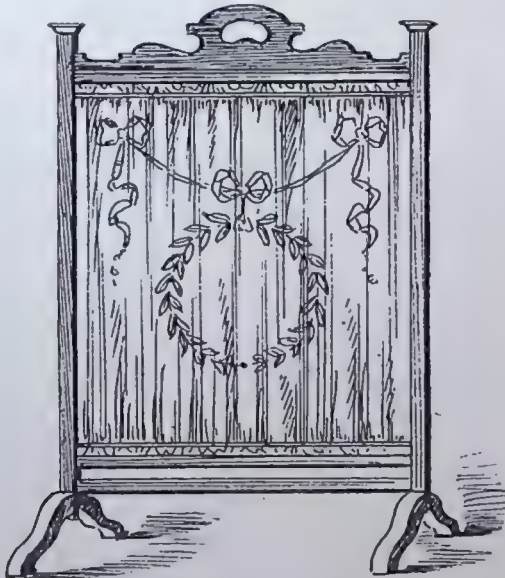


FIG. 1.—CHEVAL SCREEN.

The pediment (C) can be cut to shape from a piece 2 feet long, to finish 5 inches high by $\frac{3}{4}$ inch thick. This has a short tenon each end and also (as sketched) has a fret cut opening in centre to serve as a hand hole for lifting purposes. If preferred, the centre here may be carved or inlaid, or filled with a beaten copper panel.

The top rail (D) should be cut with tenons to enter well into the uprights from a piece 2 feet long, to finish $\frac{7}{8}$ inch by $\frac{7}{8}$ inch net, a pin being driven through the tenon from behind and the hole stopped with a mixture of glue water and

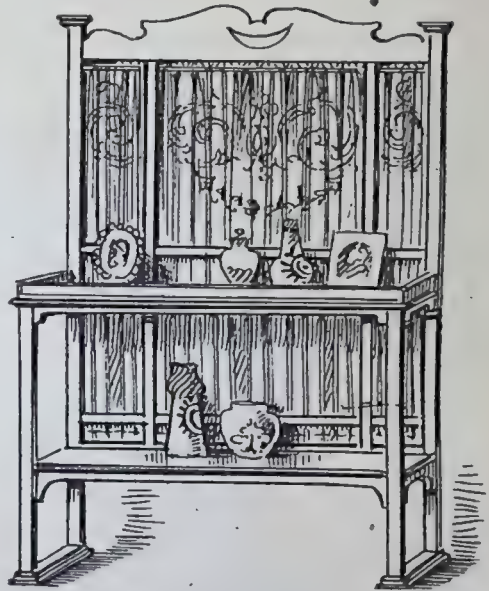


FIG. 2.—ALTERNATIVE DESIGN.

dust scraped from end grain of a piece of the wood in use. The lower rail (E) can finish a trifle narrower than that above it, say, $\frac{5}{8}$ in. or $\frac{3}{4}$ inch, but must be the same thickness back to front ($\frac{7}{8}$ inch) so that the framework is flush throughout. The bottom rail (F) will be the same as D, but should be entered into uprights about 4 inches above the bottom of uprights so that it clears sufficiently the mortises for the projecting feet (G.) These feet can be got out of four pieces 3 $\frac{1}{2}$ inches wide by 7 inches long, to finish $\frac{7}{8}$ inch thick, shaped to the serpentine line indicated and with the top edges rounded off. The spread of the feet over all may be about 12 inches. They may be fitted into position with a couple of dowels each if preferred. If tenoned the joint should fit accurately to enter with a touch of glue and be pinned.

For the curtain about one yard of art muslin or other suitable material will be required in a selected tint such as old rose, saxe blue, eau de nil green, old gold or terra cotta. This should be taped and stitched at back, so that a length of $\frac{3}{8}$ in. brass lacquered tubing can be run through it top and bottom. The tube can be supported in position by special brass fittings made for the purpose, or these can be dispensed with if the screen frame is holed from behind after the manner of the ordinary "jack towel" roller. Or, with inferior effect, the material may be fastened over lengths of cane and sprung into

holes bored to receive them. The reader who has some facility with the brush will not, however, need to confine himself to a curtain for colour effect since the screen will provide him a capital setting for his best efforts on canvas, porcelain or glass. Or again, a panel of the popular "Muranese" glass may be fitted should he prefer this to painting some simple design on the muslin or silk as indicated in the sketch.

Fig. 2 is intended for a somewhat larger screen about 3 feet 6 inches high by 2 feet 3 inches wide, and should come out successfully in white enamel. Two uprights (I, Fig. 4) may be got out from pieces 3 feet 6 inches long to finish $1\frac{1}{2}$ inch wide, or 1 inch by 1 inch or $\frac{3}{4}$ inch net. They should be tenoned top and bottom for entry into moulded caps and toes, the tenon being longer in the latter case so that it enters right through to be wedged. The uprights are also to be mortised for the four rails of frame and the supporting rails of shelves, and will also be notched for the upper shelf to fit in, as a back rail is dispensed

to back of screen, or a couple of dresser hooks will serve if the extremities of the brass tube are plugged so that they do not work out of their holding.

The curtain is indicated as fitted with brass curtain rings or silk loops. As shown in Fig. 4 the uprights (O) supporting the shelves are drawn straight, as being simpler to get out. If so fitted they can be $\frac{3}{4}$ inch by $\frac{3}{4}$ inch by 1 foot 10 inches long, but the parts are such as will be greatly improved by being turned columns, in which case they can be got out 1 inch square. The upper ends can be mortised, or holed for tenons or dowels or rails, or they may be slotted for the rail (P) to be dovetailed in as indicated in plan (Fig. 4), the end rails connecting the columns with the frame being dowelled in. The rail (P) is shaped from a piece 2 feet 3 inches by $1\frac{1}{2}$ inch by $\frac{3}{4}$ inch thick net and can be screwed through up from the underside into shelf (Q). This shelf can project 5 inches, but must be got out 6 inches wide, so that the screen framing can be notched into it

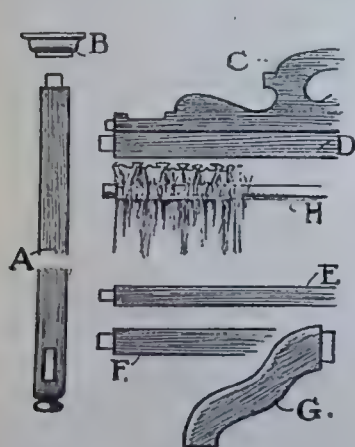


FIG. 3.—METHOD OF FITTING FIG. 1.

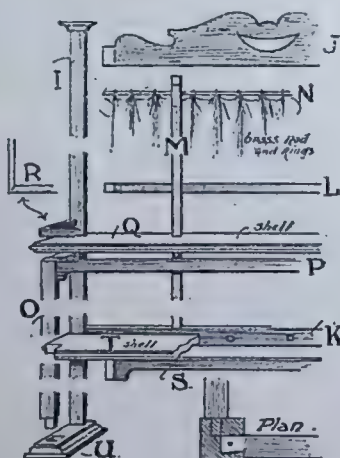


FIG. 4.—DETAIL OF FIG. 2.

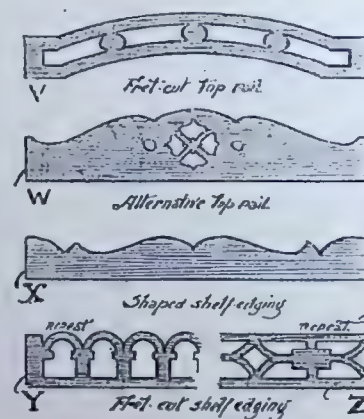


FIG. 5.—FURTHER DETAILS.

with here. The top shaped rail (J) is indicated with a fret cut opening, but the shaping would lend itself capably to treatment by the carver in fumed oak or walnut. It can be cut from a piece 2 feet 3 inches long, to finish $4\frac{1}{2}$ inches wide and $\frac{3}{4}$ inch thick, including joints. The lower rail (K) will finish $1\frac{1}{2}$ inch wide by $\frac{3}{4}$ inch. It is tenoned into position, mortised to correspond with top rail, and holed for screwing through into shelf (T). The two inner rails (L) can finish $\frac{3}{4}$ inch wide by $\frac{3}{4}$ inch thick, back to front; they are tenoned to enter uprights and are halved into the vertical uprights (M) at a height which will allow them to serve as stops to the ornamental varieties that may be stood upon the shelves. These uprights can be cut 2 feet 7 inches; they should be the same width and thickness as the rails they intersect, and are tenoned into rails top and bottom. The curtain rods (N) in this instance can be held in position by fittings screwed

to its full thickness. The outer edges can be kept square, but will be improved by moulding in simple fashion as indicated, the finished thickness being $\frac{3}{4}$ inch net.

To prevent things slipping off a shelf edging or lipping can be fitted. That shown at R, Fig. 4, may be $\frac{3}{4}$ inch wide by $\frac{1}{4}$ inch or $\frac{1}{2}$ inch thick, to be mitred at corners and glued or pinned into position. A length of 3 feet 6 inches will allow for cutting and fitting. The rail (S) may be shaped to match the upper back rail (J) if preferred, and being only $\frac{3}{4}$ inch thick can be entered into uprights (O) to its full thickness. The shelf (T) will finish 5 inches wide, to be notched at corners to fit round uprights or columns, and glued and screwed carefully through back edge at K, and up through rail (S). The end rails will not then be necessary, but may be fitted if desired.

For the toes (U) a couple of pieces should be got out to finish about 8 inches by $2\frac{3}{4}$ inches by $\frac{1}{2}$ inch

or $\frac{5}{8}$ inch, moulded as shown, or simply bevelled with a couple of mortises through each to receive corresponding tenons on the uprights (O). As shaping and details of the kind go far to give character to a screen such as this the few alternative hints offered (Fig. 5) may come in handy. V as a top rail can be $2\frac{1}{4}$ inches to 3 inches wide. W may be fret cut with neat effect to finish $4\frac{1}{2}$ inches wide. X gives a repeat shaping $1\frac{1}{2}$ inch wide, useful as shelf edging, or, if preferred, the front and ends of shelf may be edged with a fret such as Y or Z to finish $1\frac{1}{2}$ inch wide. The lettered and dimensioned list of parts detailed below will be found serviceable for ready reference, note being made that all lengths are full to include joints and allow of paring to a fit, but all widths and thicknesses are net finished sizes.

FOR FIG. 1.				
	Long.	Wide.	Thick.	
A 2 uprights	3' 3"	x	$2\frac{1}{2}$ "	x
B 2 cappings	2' 2"	x	$2\frac{1}{2}$ "	x
C 1 top shaping or pediment	2' 0"	x	$2\frac{1}{2}$ "	x
D 1 top rail	2' 0"	x	$2\frac{1}{2}$ "	x
E 1 lower rail	2' 0"	x	$2\frac{1}{2}$ "	x
F 1 bottom rail	2' 0"	x	$2\frac{1}{2}$ "	x
G 4 shaped feet	7"	x	$3\frac{1}{2}$ "	x
H 2 lengths brass tube	1' 11"	x	$\frac{1}{2}$ " diam.	
1 yard curtain material.				

FOR FIG. 2.				
	Long.	Wide.	Thick.	
I 2 uprights	3' 6"	x	$1\frac{1}{2}$ "	x
J 2 cappings	2' 2"	x	$2\frac{1}{2}$ "	x
K 1 shaped top rail	2' 3"	x	$4\frac{1}{2}$ "	x
L 1 lower rail	2' 3"	x	$1\frac{1}{2}$ "	x
M 2 lesser rails	2' 3"	x	$1\frac{1}{2}$ "	x
N 2 do. uprights	2' 2"	x	$1\frac{1}{2}$ "	x
1 yard curtain material.				

SHELVES AND SUPPORTS.				
	Long.	Wide.	Thick.	
O 2 uprights	1' 10"	x	$2\frac{1}{2}$ "	x
P 1 rail	2' 3"	x	$1\frac{1}{2}$ "	x
Q 2 side do.	2' 3"	x	$1\frac{1}{2}$ "	x
R 1 shelf	2' 3"	x	$1\frac{1}{2}$ "	x
S Shelf edging	2' 3"	x	$1\frac{1}{2}$ "	x
T 1 rail	2' 3"	x	$1\frac{1}{2}$ "	x
U 2 side do. if required	2' 3"	x	$1\frac{1}{2}$ "	x
V 2 toes	9"	x	$2\frac{1}{2}$ "	x

About Cedar Woods.

Many woods owe their special value for cabinet work and similar uses to the aromatic scent they possess. This is especially the case in the large group of woods commonly called cedars. The true cedars belong to the genus *Cedrus*, of which the cedar of Lebanon is perhaps the most famous example. In America, however, the name is extended to include the junipers, arborvite, some of the cypresses, and even certain hardwoods, particularly the Spanish cedar of Mexico, West Indies and Central America, a tree possessing an internal structure like mahogany and an odour like cedar. Writing in *Woodcraft*, Mr. Samuel Record mentions that the scent of wood depends upon chemical compounds, such as ethereal oils, which form no part of the wood itself, but are by-products or waste substances thrown off during the vital processes of the tree. Ordinarily there is more of this material in the heart than in the sap, consequently the odour of heartwood is much more pronounced. It is also greater in wood in a green condition than when seasoned, more evident on moist surfaces than on dry, and on unfinished material than after polishing. Upon prolonged exposure to the air, or when submerged in water,

wood gradually loses its scent. One of the most common woods used for chests in America is the red or pencil cedar or juniper and the southern form often called cigar-box cedar. The colour of the fresh wood is a deep reddish brown or purple, becoming dull upon exposure. The trunks are often fluted so that boards show patches of pure white sapwood intermingled with the heart. The wood is usually knotty, but where the knots are sound they improve rather than injure the appearance. The demand for this wood for pencils is making very serious inroads upon the supply. The incense cedar of the Pacific slope possesses a very characteristic spicy-resinous odour and taste. It takes its name from the fragrant odour it emits when burned. The colour of the fresh wood is pale reddish brown, often with a decidedly roseate hue. Upon exposure, however, it becomes very dull. The trees attain large size, are fairly abundant, and the wood is as well suited for cabinet purposes as the Eastern red cedar or juniper. There are two other cedars in the Far West that commend themselves for use where a fragrant, spicy odour is desired. The yellow cedar and Port Orford cedar (or Lawson's cypress) occur in the Pacific North-west. Although the former is more abundant and appears more frequently on the market, the woods are so much alike that it is not customary to distinguish them.

Spanish cedar is not a cedar at all, but closely allied to the true mahogany which it rather closely resembles. It is preferred above all other woods for cigar-boxes and the drain on the forests has been so great that the more accessible tracts are nearing exhaustion. There is said to be still a large amount of the timber in Mexico and Central America, but the difficulty of logging it and getting it to port makes the cost of the wood prohibitive for any but the better grade of cigar-boxes. Sometimes the inside of the boxes is veneered with it, or again some of the cheaper mahogany-like woods are artificially scented and used as a substitute. For use in chests and cabinet work Spanish cedar combines the fragrance of the true cedar with a handsome figure and grain approaching that of genuine mahogany.

The list of cedars of the Old World is very long. The most famous is the cedar of Lebanon of South-west Asia. It was largely used by the ancients on account of its great durability. This property, however, is characteristic of all of the woods of the cedar group, and is due to the presence of oils and resins in the wood. Experiments have shown that if these materials are completely removed the wood will soon decay if placed in contact with the soil. Like others of the group the cedar of Lebanon has a very pleasant odour. The wood is not especially adapted for construction purposes, and it is doubtful if the cedar used in the building of King Solomon's temple was the same as now bears the name cedar of Lebanon.

Wood Block Floors.

One of the very best types of floor (rather an expensive one) is the creosoted hardwood block, laid end grain. Several American paper mills have used these with considerable success. The floor has the advantage of resisting water conditions, of standing up under the hardest trucking, of being a resilient, noiseless floor and one which can be kept very clean. For practical use the creosoted block is said to be unsurpassed. Where these are laid on a concrete floor, the practice is to dip them in tar and stick them down to the floor, then grout between the blocks with cement. A 3-inch block has sufficient depth.

Art Metal Work.

A Trinket Box with Copper Mounting.

THE box here illustrated might serve any of a hundred purposes. It would do for a workbox, a card box, or, if the proportions were somewhat varied, for a tea caddy. But as the original was intended to guard safely a collection of small curios it has been christened a "trinket box."

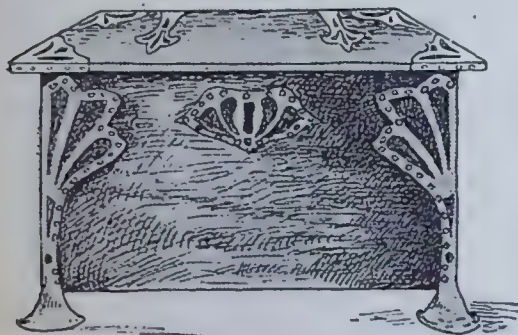


FIG. 1.—TRINKET BOX.

The main part of the box is of wood, and the metal worker's share consists in adding the perforated corners, hinges, and lock plates. It is a matter of some importance that the box which is to have so much trouble spent on the fittings should be worthy of them. It should be well made, of good sound wood, preferably mahogany, and given a dull waxed finish. The colour should be the shade generally known as Chippendale, not the reddish colour used for much modern furniture. Ash stained green might also be used. The lid consists simply of a rectangular piece of wood, the hinges being part of the metal worker's duty. The proportions of the box may of course vary according to taste, but 9 ins. by 5½ ins. by 4½ ins. deep is a useful size, especially if fitted with a tray. The interior may be lined with velvet. If this is impracticable it is advisable to have the bottom of the box and of the tray covered with either velvet or cloth.

The metal for the mounts must not be too thin or the effect will be paltry. Nothing thinner than gauge 6 (B.M.G.) can be used, and No. 10 is perhaps the limit in thickness.

The design is drawn on the metal in the usual way, or if preferred may be drawn on thin paper and pasted on. The cutting out is done by means of an ordinary hand fretsaw. Care must be taken to keep the work thoroughly well oiled while the sawing is proceeded with; otherwise the blades heat and lose their temper. The metal is sandwiched between two thin pieces of wood and secured with a few small screws.

When the cutting has been done, the outlines must be tidied up to the line with the file. Use

needle files for the very small corners and a curved file for the other parts. Take a hammer with a very small knob end and tap all round the outlines so as to soften off the angles. Where two cuts meet it will be necessary to use a small flat-headed punch to form the faceted edges. While doing this the work must be held on a flat anvil. If the metal has got curled or bent, a little hammering judiciously applied will not only flatten it, but will also give a pleasant surface. Of course it must not be left with rough looking bruises in the style with which we are only too familiar on much so-called "art copper ware," but just a slightly uneven surface. It may not be generally known that much of the cheap "hand-hammered" copper work is spun or stamped by the ordinary manufacturing process, and then deliberately roughened to look to those unacquainted with the real thing as if it had been raised from the sheet. In real hand work every line and touch should result from a well-considered intention on the part of the maker.

If parts still appear to be stretched, and the whole does not lie absolutely flat, anneal it thoroughly and lay it face down on a piece of soft wood and rub it over from the back with the plane face of a large planishing hammer. It must be noted that metal is not made to lie flat by having the part that bulges up hammered; as a moment's consideration will show that would only make matters worse by further stretching the spot. The way to manage is to expand the surrounding parts slightly so that the upstanding

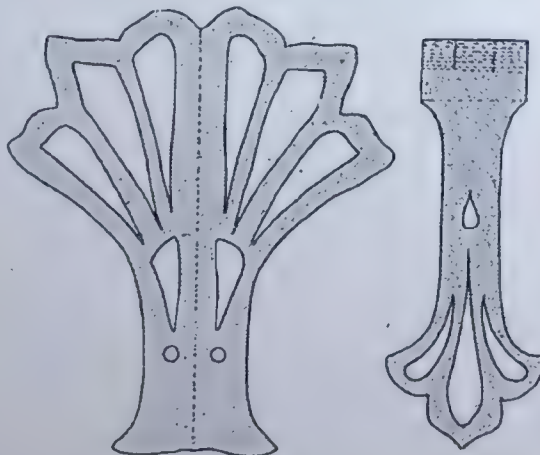


FIG. 2.—CORNER ORNAMENT.

FIG. 3.—LID PART OF HINGE.

part has room to lie down. The work must, if necessary, have a little further tidying with the file, the holes for the nails drilled, and last of all the metal must be annealed. It should then be cleaned, coloured and polished.

The hinge pieces will require some further attention before cleaning. There are two ways of making hinges. The strongest is to solder

three short lengths of tube on to one, and two lengths on to the other piece. There is of course no possibility of these tubes opening as they are seamless. Every one, however, does not possess accommodation for hard soldering, and soft is not satisfactory at all. In these circumstances it is best to make the tube in one with the hinge. This must be done after the annealing, as the hardening of the metal in working strengthens it considerably. Obtain a steel knitting needle of the same size as the brass wire which is to be used as a pin for the hinge. Get a small piece of hard wood and cut a groove in it rather larger and about twice as deep as the needle. Place the end of the hinge over the groove and the knitting needle over that. Put the whole in the vice so that the needle forces the copper into the groove. Once a start has been made it will be found easy to grip the metal and needle in the vice and bend the rest of the end over to form a

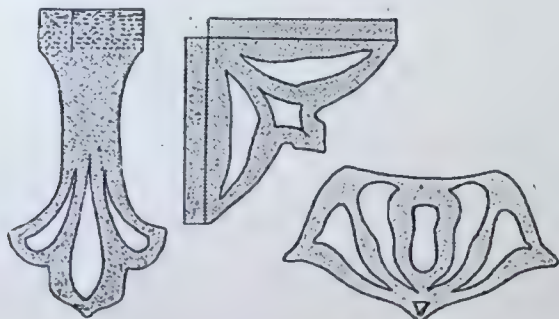


FIG. 4.
BOX HALF OF
HINGE.

FIG. 5.
LID CORNER
PIECE

FIG. 6.
LOCK PLATE
FOR FRONT.

little tube. File a piece out of the middle of one piece and off the two ends of the other of each pair. Take a piece of brass wire and thicken one end by running it to a bead, pass it through the two parts and supporting the bead on an anvil, hammer the other till it spreads sufficiently to prevent its return. If the wire is an absolutely close fit the riveting is unnecessary. The hinges should be secured at the turnover at the back of the lid with small screws, and similarly on the lower half just close to the joint. Elsewhere hand made nails should be used, either brass or small steel ones with faceted heads. The glittering steel and dull satining copper make a most attractive combination. A stay to match the lining of the box should be fixed inside the lid.

The whole design might be carried out with very good effect on a much smaller scale, using a box covered with a delicate shade of suede leather and silver for the mounts. A very handsome effect would be obtained by covering a box with sheet brass before adding the mounts.

Japanese Decoration.

Simplicity is the keynote of Japanese interior decoration. Though Japanese buildings at first sight seem to lack the impressiveness of the massive stone compositions of Greece, Rome and Byzantium and of our own modern steel-frame buildings, they are full of suggestion and one soon comes to appreciate their charm, for they are quaintly beautiful and often compose with the landscape most admirably. The fact that the Japanese have restricted themselves to wood in building is partially, if not entirely, accountable for the lack of monumental character in their work. They have developed the possibilities of construction in wood to such an extent, however, that theirs has been admirably called "the perfect style in wood." The Japanese handle wood with extraordinary fineness of feeling. They do not obscure the beauty of texture and grain with paints, stains or varnishes, but they employ lacquer with marvellous success.

The average Japanese house is simply a wide floor raised on posts two or three feet above the ground and covered by a heavy appearing roof supported on many posts. Round the outside runs a narrow verandah, closed at night by storm shutters of solid wood that are stored in pockets during the day. The inner wall of the verandah consists of sliding screens covered with translucent rice paper through which a soft mellow light comes into the living-rooms. The interior of the house is divided into rooms by sliding screens covered with opaque paper, often beautifully decorated with painting. These screens not only slide but can be lifted from their grooves and entirely removed, throwing the whole interior into one apartment. Above these sliding screens there is an open grille work of wood often elaborately carved and coming down so low that the European passing from one room to another barely escapes striking his head against the timber which forms the lower edge.

The Japanese vestibule is a square porch open at the front and with a wide curved roof. In the more elaborate houses there is an outside corridor from six to twelve feet wide, serving both as a passage-way and an ante-room to the chief apartment, which is divided into two sections.

The tea-room is an especially interesting feature of the Japanese house and one which offers many practical suggestions. It often shows an even stronger tendency toward simplicity than the other rooms of the house and frequently is rustic in character. Japanese interiors are austere almost to the point of asceticism. There are few pieces of furniture and they are small. There are no chairs excepting temple chairs, for everyone squats upon the floor, which is covered with thick mats. And there are no beds, for the Japanese sleep upon quilts spread upon the floor and these are rolled up and stowed away in closets during the day. As a rule, the only solid walls in the house are at the back of the two niches in the principal room, which corresponds to our drawing-room or parlour. In one of these niches a scroll picture is usually hung while the other contains an arrangement of shelves and an object of art. As emphasised recently by the *Wallpaper News*, a great deal of the charm pertaining to certain Japanese forms of decoration lies in the fidelity with which native processes are followed in the producing of distinctive effects.

IN HOME HANDICRAFTS for April (price One Penny), there appears a useful article on "Common Faults in Model-making."

How to Build a Small Greenhouse.

A CORRESPONDENT recently asked for a design and instructions for building a greenhouse, complete in itself, size twelve feet long by eight feet wide, and as the subject is one that will probably appeal to many readers we have prepared the following diagrams and notes.

From the amateur point of view the easiest method of building a greenhouse is to form the skeleton in ordinary timber of rectangular section, and to nail on fillets to take the boards to form rebates for the door and so on. As the house illustrated is supposed to be portable (that is, to take apart for removal, if required) it is better to have the glass fixed in sashes, rather than direct into the main structure.

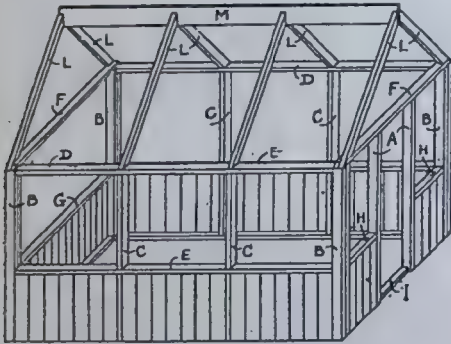


FIG. 1.—SKELETON FRAMING OF GREENHOUSE.

The whole of the carcass is made from 4 ins. by 2 ins. scantling, with the exception of the sills, which are an inch less in width to allow the boards to nail on to them instead of fitting inside. These two sizes of timber are the cheapest which can be bought, and if cost is a serious matter the smaller size may be used throughout, the sills being still an inch less.

The specification of timber required for the framework of the house is as follows:—

14 pieces 6 feet 6 ins. long for door, corner, and intermediate posts (A, B and C respectively, Figs. 1 and 2).

4 pieces 12 feet long for side plates and rails. (D and E, Fig. 1.)

3 pieces 8 feet long for end plates and rail (F and G).

2 pieces 2½ feet long for short end rails (H).

2 pieces 3 ins. by 2 ins. for end sills (I) 8 feet long.

2 pieces 3 ins. by 2 ins. for side sills (K), 12 feet long.

8 pieces 4 ins. by 2 ins. for rafters (L), 6 feet long.

This makes a total of 216 feet of 4 ins. by 2 ins. and 40 feet of 3 ins. by 2 ins. In addition, we shall require a 12 feet length of board for the ridge M, which should be 8 ins. wide by 1½ in. thick. In purchasing the timber care should be taken to get

it fairly straight and out of twist, even if it costs a trifle more for the privilege of picking the best.

Before attempting this important part, a close study should be made of Fig. 1, so that the correct idea of the construction is understood. Having obtained a more or less clear idea as to what is really required, the parts for the closed end, Fig. 2, may be set out. These consist of two of the corner pieces, B, one each F and G, and one piece I. The two first must be set out for mortises and tenons as Fig. 7; the plate F requires to be as Fig. 3; G as Fig. 4. I is the same as G, with the difference that, being an inch less in width, there will be no shoulders on the face side. The edge of the wood will form the side of the tenons on that side, so that the result, when put together, will be as Fig. 2. In Fig. 2 is shown an intermediate upright. This is not absolutely necessary, though it may be used if preferred. It will certainly make the end of the house firmer. If used it should be formed as shown, the upper part being the same width as the fronts and rails and the lower part the same as the sills, so that the boards will fix on the face, covering it in.

The other end of the house may be set out in the same way, using the two door posts in addition to the corner fronts. These will have to be mortised and tenoned as Fig. 6. The sill, instead of being mortised to take the bottom ends, will simply need notching out, so that, when fixed, these fronts will project beyond the sill the same as the others. The lengths of the short rails, H, will be obtained from the plates F, the distance from shoulder to shoulder on the one having to be the same as that between the mortises on the other.

The sides of the house will be set out and put together in the same way as the ends, taking care to make them so that the plates will pass under the end plates as shown in Fig. 1. In this case also the corner posts must be fixed on flat-ways, as shown in Fig. 9. They will, therefore, have to be mortised with narrow mortises as Fig. 5, the tenons on the sills and plates being made accordingly.

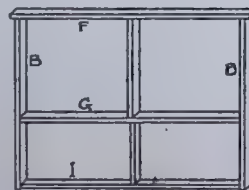


FIG. 2.

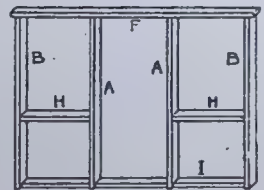


FIG. 2A.
FRAMING OF TWO ENDS OF GREENHOUSE.

The four parts can now be put up in position and holes bored for the bolts which will hold them together. These should be eight in number, two at each corner, near the top and bottom. The head of the bolts should be on the inside, as section Fig. 12, and if the bolt and nut are well greased before screwing up there will be no difficulty in unscrewing.

Fillets can now be nailed on to the posts and

under the middle rail, and the boards nailed on, making the section at the corners as Fig. 10. As the fillets should not be fixed to both parts of the corner posts, one will have to be narrow as shown; otherwise these would have to be removed on taking the house apart. Similar fillets will have to be nailed all round the upper openings to take the lights, as in Fig. 11, and for this reason it is necessary to have the heads of the bolts inside, and also to sink them in as in Fig. 12.

The rafters should be fixed immediately over the intermediate fronts as shown in Fig. 1, and of course at the ends of the house. These latter must be cut at the bottom end as Fig. 13, the others

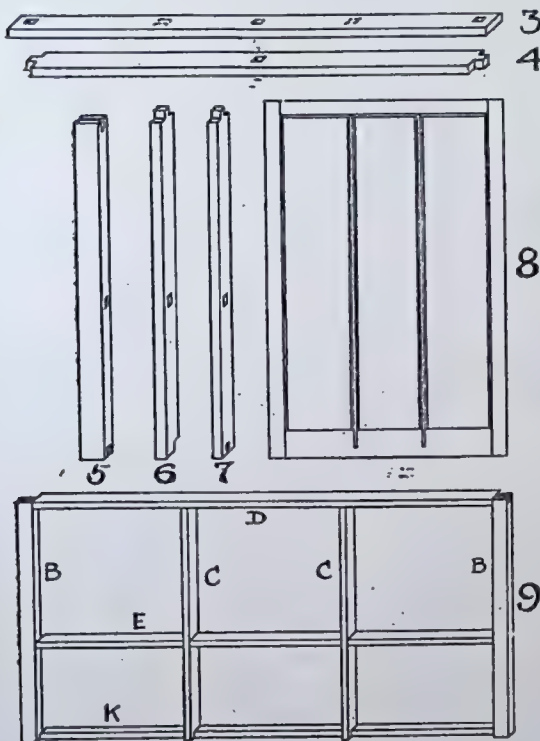


Fig. 3, End Plate, mortised. Fig. 4, End Rail, mortised and tenoned. Fig. 5, End Post, mortised. Fig. 6, Door Post, mortised and tenoned. Fig. 7, End Post, mortised and tenoned. Fig. 8, Roof Light. Fig. 9, Side Framing.

being as Fig. 14. Before the rafters can be fixed the end plates must be sloped off as dotted lines in Fig. 15, and also cut back to the thick line for half the width to take the thin tongue left on the bottom end of the rafter.

The rafters must have a strip fixed down them, as shown in Fig. 16, forming a division between the roof lights. A small channel should be made down the rebate as shown to act as traps to take off the water. The outside rafters will only require a rebate on one side; therefore the pieces on the top will have to be thicker and kept level on the outside. To facilitate taking apart the rafters should be fixed with screws.

The roof lights should be made in the same way as an ordinary frame light, without any cross bars, and with a wide thin bottom rail (Fig. 8). The materials can be bought ready worked. The stiles and top rail in section are as Fig. 17 and the bars as Fig. 18. The bottom rail is a plain piece of board, $4\frac{1}{2}$ ins. wide.

Some of the roof lights may be fixed, or they may all be hinged to the ridge as in Fig. 19. The ridge board should be fixed slightly above the lights, so as to allow them to open freely. The lights should be long enough to hang over at the eaves about $1\frac{1}{2}$ in., so as to carry off the water clear of the sides of the house.

The side lights will be made from the same kind of framing as the roof lights, and no cross bars should be used in these. Some of them should be hinged at the top, others fixed. Lights should be made to fit into the roof gables, and these will of course be fixed. Strips fixed to the inside of the rafters will form the rebates for these.

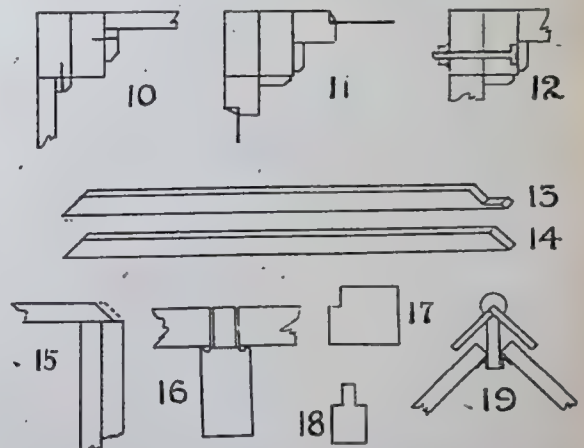


Fig. 10, Side and End Boarding with Fillets. Fig. 11, Corner with Side and End Lights in position. Fig. 12, Method of fixing Sections together. Fig. 13, End Rafter. Fig. 14, Intermediate Rafter. Fig. 15, Top Plate cut back to take End Rafter. Fig. 16, Rafter with Roof Light in position. Fig. 17, Section of Roof Light Framing. Fig. 18, Section of Bar. Fig. 19, Section of Top of Roof.

The door may be an ordinary ledged one. Or, what is better, a stock door may be purchased; but if this is done it should be in hand before the house is built, so that the opening in the end may be made to suit.

The lights should have one coat of paint before the glass is put in, and in glazing the roof lights the glass should be bedded in only, no top putty being needed. The side lights should be puttied on the face as well as bedded in.

We should have stated before that every tenon and mortise should be painted before it is put together, and it will also be well to paint the edges of the boards before they are fixed on, easing the tongues first if necessary. All screws used in fixing the rafters and other parts should be greased before insertion, otherwise they may refuse to come out if it be wanted to move the greenhouse.

The Question Box.

As one of the main objects of THE WOODWORKER AND ART CRAFTSMAN is to help its readers, questions of general interest dealing with any branch of handicraft will be answered on this page.

As it is impossible to reply fully in these columns to all queries received, questions on subjects within the scope of this Magazine are replied to by post under the following conditions:—(1) Questions dealing with distinct subjects should be written on different slips, on one side of the paper only, and the sender's name should be written on the back of each. (2) Question should be accompanied, wherever possible, with fully dimensioned sketches, and correspondents are recommended to keep a copy of their Questions for reference. (3) A stamped addressed envelope (not post-card) should be enclosed. (4) Questions will be answered as early as possible after receipt, but when sketches have to be prepared, or when research has to be made, a short interval must elapse before the Reply can be forwarded. The insertion of Replies in this column cannot be guaranteed, but all Replies of general interest will be given when space permits. All Questions should be addressed to The Editor, THE WOODWORKER AND ART CRAFTSMAN, 57, Farringdon Road, London, E.C.

Linfold Panelling.

[362] H. C. B. (Rotherham) asks for particulars regarding "Linfold" panelling.

REPLY.—Linfold or parchment panelling is a form of decoration much used in the woodwork of the Tudor period; it is of Flemish origin, and takes its name from the resemblance which it bears to a folded napkin.



The appearance of a panel of this type depends greatly on the sections of the mouldings, and it is therefore good policy to make a clay, plasticine, or rough wooden model so as to obtain the desired effect before working up in oak. The panel is moulded to the section shown in the sketch by the use of the gouge and moulding planes; the ends are then worked down and carved up. Several other good examples of this class of panelling will be found in Francis Bond's book on "Ecclesiastical Woodcarving," or Augustus Welby-Pugin's "Ecclesiastical Ornament"; these books may be seen in almost any good Public Library.

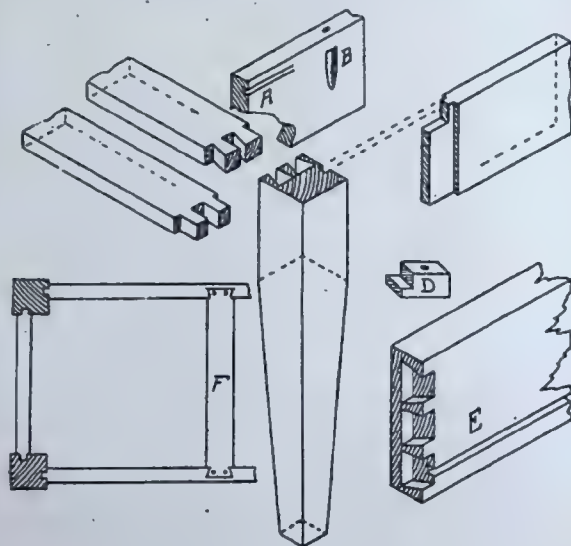
'Fox and Goose.'

[363] R. C. B. (Gloucester) writes:—"I have been playing the game of Fox and Goose as your article in THE WOODWORKER, Vol. 14 (July, 1910), and should be glad if you would let me know if the game could be made for four players to take part at once. Should I be right playing with four Foxes and 66 Geese, as marked on my sketch?"

REPLY.—In reply to your query, the writer of the article has not previously seen a four-handed game of Fox and Goose suggested. The lay-out of your board appears to be proportionately correct, and it would no doubt result in a good but somehow tedious game. We should certainly say make a temporary board and try the experiment. By the way, may we point out that four foxes and one set of geese as shown on your sketch would require five players, taking moves in rotation, and not four as you state in your letter; again each fox would have to have a distinct colour or the result would be chaos. If you find your suggestion works out well in actual practice perhaps you will be so kind as to drop a line to the Editor for the benefit of other readers.

Kitchen Table.

[364] H. W. (Hythe) writes:—"Would it be asking you too great a favour to let me have a suitable design for a good stout deal kitchen table, size 5ft. by 3 ft. by 2 ft. 6 in. I am not, as I hope you will understand, a man with any experience behind me in carpentry—only an amateur, and I am asking you this favour. One drawer, for plate, is all I require in the table when finished. What I particularly want are the kind of joints necessary and method of fixing together when all finished?"



DETAILS OF KITCHEN TABLE (No. 364).

REPLY.—Our sketch at F shows a half plan of the table with the top removed, and a cross stretcher 4 in. wide dovetailed and screwed into the side, so as to stiffen up the frame and provide a means of screwing down the top. This cross stretcher which is marked F should be $1\frac{1}{2}$ in. in thickness and the drawer should be made of sufficient length so that the stretcher will answer the purpose of a drawer stop. We give an isometric view of a square tapered leg and show the method of dovetailing and tenoning into their respective positions the rails above and below the drawer. Note that the whole of the tapering is obtainable by planing away the inside of the legs from the dotted line to the foot. The side rail of the table is shown and the method of jointing is the haunched mortise and tenon joint; the side rails should not be less than $1\frac{1}{2}$ in. in thickness for a table of the given dimensions. At A and B we show the inside of a rail and two methods of preparing a suitable method of fastening the table top. At A the top edge of the rail is grooved its entire length, while D shows a wooden button, the tongue of which engages in the groove at A. This button is bored and a screw goes through the button into the table top. This method has the advantage of allowing the table top to slightly shrink or swell from the sides of the frame and thus minimises the danger of splitting or opening the joints. B shows the method known as pocket screwing; the timber being gouged away so as to admit a screw head and the hole for the shank of the screw is bored obliquely. E shows the drawer front dovetailed ready to receive the sides, and a

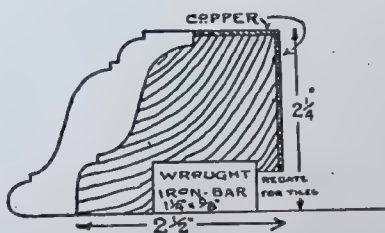
groove at the lower edge is prepared to take the drawer bottom. We should advise you to use the following sizes of timber:—Table legs, 4 ins. square, tapered as sketch or turned up in the lathe; drawer rails, $1\frac{1}{2}$ in. thick; table top to be of yellow pine, 1 in. thick. The top should overhang the frame about $1\frac{1}{2}$ in. all round. A couple of pieces of timber will be required for the drawer to run upon, and these should be tenoned into the lower drawer rail and screwed through the edge into the table sides. A similar rail will run along the top edge of the drawer to prevent it kicking up and down as it is moved backward and forward. With exception of the table top deal may be used. We think the method of construction will be quite clear to you after a glance at the sketches. We thank you for the good wishes and we are pleased to hear that you have found THE WOODWORKER of great value to you.

Adjusting Circular Saws.

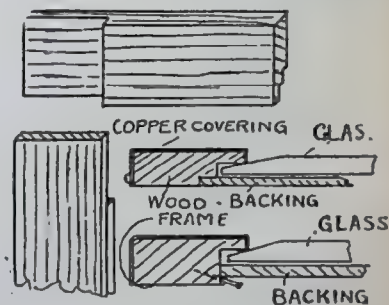
[365] R. N. writes:—"Can you tell me how to centre a saw with too large a hole? It is a great disadvantage that the holes are not a close and central fit on the spindle, and I cannot see why they are not made to be so."



THE ADJUSTMENT OF CIRCULAR SAWS (No. 365).



SECTION OF OAK CURB (No. 366).



WOOD BACKING FOR COPPER FRAME (No. 367).

REPLY.—The writer who is answering this question has had upwards of 20 years' experience in the wood-working and woodworking machinery trades, and he has never in the whole course of his experience seen a circular saw-blade which exactly fitted both the saw spindle and the driving pin of the machine. There are reasons why the saw should not be an exact fit: (a) If the saw spindle which carries the saw becomes warm or heated by insufficient lubrication or other cause it would expand, and the spindle would grip the circular saw blade to such an extent that it would be impossible to change it for a finer toothed or larger diameter saw blade until it had cooled down. (b) If the saw blade became hot, as is frequently the case, by an excessive quick feed or bad packing or sharpening the saw would become "centre bound," and buckle (*i.e.*, not run true). The method adopted by all good sawyers is as follows: Put the saw on the spindle in the ordinary way, and just before finally tightening up the nut, hold the saw with the left hand, and pull it backwards until it catches on the driving pin whilst tightening up the nut on the saw spindle (see sketch). The periphery of the saw blade will now be slightly eccentric with the centre of the spindle. The saw should now be revolved just as though cutting timber, and a piece of fine grit stone should be gently held against the edge of the saw so as to grind down the teeth to a true circle. Now take the saw off the spindle and sharpen it up by filing

until the edge of the teeth finish at the true circle. When putting on the saw blade always remember to hold it back against the driving pin when tightening up the nut, and this will ensure a true cutting circle with every tooth doing its fair share of work. The writer agrees that much more play is left than is necessary in the fitting of circular saws, and this comes along because one firm make the saw blades and another firm confine themselves to the manufacture of saw benches and machines of a similar class.

Oak Curb.

[366] W. B. (Rochdale) asks for a suggestion for a curb in oak, about 4 ft. 6 ins. long, suitable for a drawing-room fireplace.

REPLY.—We give a sketch of section of a curb suitable for making up in oak. It will be noticed that a wrought iron bar is made the same shape as the curb, and this is let into the woodwork and screwed in its position, thereby strengthening the mitres. The inside and the top edge of the curb are covered with sheet copper so as to protect the timber from the direct heat of the fire. This sheet copper is held in position by studding the top and inside edge with antique pattern copper-headed nails. We give an alternate

outline for the section of the moulding, and we would suggest that a much more serviceable curb could be made by making an inside shape of common timber and covering the whole of the exterior with beaten copper. Of course, if this idea was followed out a more severe section of mould would be chosen and one that was devoid of quirks or sharp corners.

Wood Backing for Mirror Frame to be Carved in Copper.

[367] Frame (Barnstaple), writes to ask to construct the woodbacking for a mirror frame which is to be covered in copper, also how to keep the colour produced by hypo and sugar of lead on silver articles from fading without using lacquer.

REPLY.—The sketch illustrates a corner joint, and also sections showing the arrangement for holding glass and back. There is no really satisfactory method of retaining the colour except lacquer or celluloid varnish.

Soldering in Art Metalwork.

[368] F. B. (Barnstaple) writes:—"Why is paraffin used with borax in soldering?"

REPLY.—The use of the paraffin is to form the powdered borax into a paste. It is more suitable than water because it does not evaporate to the same extent, while oil would burn and form a deposit which paraffin does not leave.

Mantelpiece to Cover Kitchen Range.

[369] J. H. (Shipley), has taken a house in which there is a kitchen range in one of the living rooms. This he wishes to cover with a false mantelpiece and asks for suggestions.



SUGGESTED MANTELPIECE TO COVER A KITCHEN RANGE (No. 369).

REPLY.—We illustrate herewith a sketch of a mantel which was used for a similar purpose to that which you describe, viz., to cover up the oven and boiler of an ordinary kitchen range. The woodwork was made in the usual way and painted to match the decoration of the room. Tiles were not used to fill in and cover up the oven and boiler on account of their expense and the difficulty of fixing. The writer obtained two large sheets of enamelled iron similar to those used as an imitation of tiled hearths; these were screwed behind the woodwork of the mantel and with the assistance of a sheet metal worker the two inside pilasters were made. It will be found necessary to fill in with sheet metal from the edge of the pilaster to the back of the fire proper to prevent the smoke circulating around the top of the oven and boiler; the portion shaded black at the inside of the fire place denotes this portion. Any exposed portion of woodwork at the back of the mantel was covered with sheet asbestos. By using enamelled iron in the place of tiles a good effect is obtained at about one-third the cost. Enamelled iron tiled hearths may be purchased at any good stores size about 4 ft. by 18 in. for about 3s. 6d. each. The cost of the wooden mantel, "pine" primed, was 39s.

Fittings, etc., for Cycle Side Car.

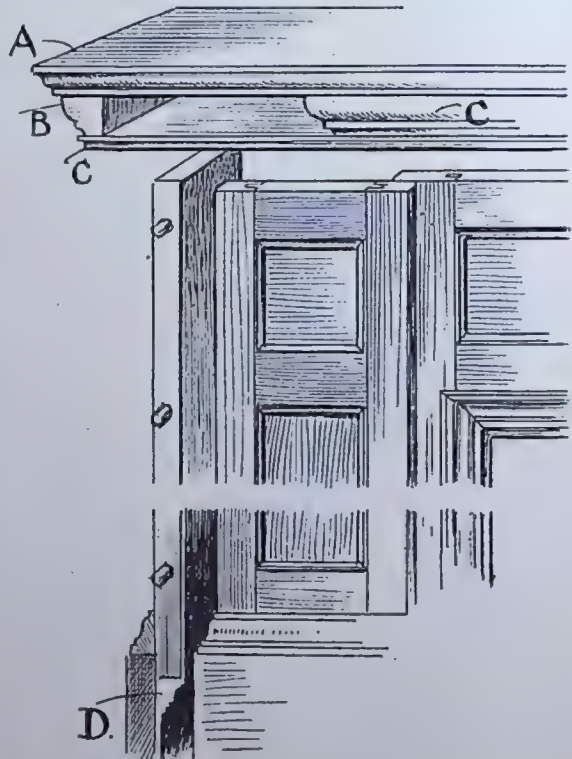
[370] J. W. asks where he can obtain fittings, etc., for a motor cycle side car.

REPLY.—For the necessary fittings for your car you cannot do better than apply to Messrs. Oakden's, London Fields, London, N.E. They will supply anything you require in latches, locks, hinges, &c. With reference to the stuffing materials (Pegamoid, &c.), you will have to get this at an upholsterer's, the quantity being too small to allow of your getting it from a wholesale firm. Pegamoid is good, and for stuffing you can use vegetable fibre, unless you like to go to the expense of hair, which is of course much the best!

Boxing in a Mantel.

[371] L. S. (Torquay) writes:—"I recently saw an oak overmantel and chimney piece fitted over existing marble mantel, making a tenant's fixture. Can you suggest a method of jointing same? Could you also give me particulars of antique brown oak stain?"

REPLY.—Your letter, as we read it, refers to a wooden structure made to fit over and mask an existing marble or iron mantel fixture. This is generally termed "boxing in a mantel," and the detail will work out somewhat differently in accordance with the design of the fixture to be covered in. We give a sketch indicating how the shelf, jambs, etc., may be covered in, but are unable to give a design that would be serviceable to you without a measured drawing of the mantel referred to (a photograph with size of opening would do fairly well.) In measuring for the purpose in view care should be taken to strike all sizes exactly from the wall, and for the shelf a clearance of $\frac{1}{4}$ in. above and below and $\frac{1}{4}$ in. in depth may be allowed. For this as at A the top ($\frac{3}{4}$ in. thick) may be moulded as shown. The sides (B) will be glued between A and C, moulded as shown, and the whole cut with the grain running in the same direction so that the whole can shrink together. The front can be panelled up, mortised and tenoned together or doweled, the base projections being cleared as at D. Any



HOW TO BOX IN A MANTEL (No. 371).

projections such as a truss on the jambs would of course have to be cleared by separately boxing in with a small truss or suitable mould under, to retire back on to the face of jamb framing below. Where convenient, parts of the casing can be fixed by internal screwing through thumb slots, and it may of course be

necessary to plug the wall for a stiff holding. One point above all it is necessary to attend to, viz., that all stuff to be used must be specially selected, free from shakes and knots, and absolutely dry; otherwise, being in such close proximity to the fire, trouble in the form of opening joints and rifts will ensure. A mixture of liquid ammonia and Vandyke brown, reduced with water and coloured with Bismark brown, sienna, or amber as required, should give you the stain you want; or try bichromate of potash dissolved in water and tinted with Vandyke brown, giving several coats.

Roll Top Desks.

[372] G. R. (Kilmarnock) writes:—"Have the drawings of a roll-top desk ever been published in your pages? If so, please give numbers. Kindly give name of firm from whom I can purchase the roll-top ready made, as I do not feel competent to tackle that part. As I am only an amateur woodworker, though with considerable experience and knowledge of joints, which wood do you recommend as suitable?"

REPLY.—A series of articles on the making of a roll top desk appeared in *THE WOODWORKER*, November 28th, 1908, and ran through the following numbers. Another exhaustive series of articles on the same subject, giving a design and cutting list of timber required, appeared November 29th, 1909, and following numbers. Queries relating to the above subject (the method of locking the drawers, with illustration) were given August 28th, 1909, and a section of the roll top desk fall or curtain was given April, 1911. If you feel that you are not competent to make the curtain or roll top fall, write to Messrs. Harris Lebus, Cabinet Works, Tottenham Hale, London, and they will quote you for the finished article. We should like to point out to you that the laths or beads of a similar section to those shown in *THE WOODWORKER* of April, 1911, could be bought ready machined to shape from Messrs. Borst Brothers, 370, Old Street, London, E.C., and if you obtained these laths ready made we think that you would successfully cope with the work. The wood we should advise you to use for the construction of the exterior portions would be oak; it stands the test of time, and if dull polished or fumed it is not as apt to scratch and mark as a highly polished timber like mahogany or walnut. For the drawer boxing we should advise the use of good dry canary whitewood and three-ply drawer bottoms.

Cleaning Old Oak.

[373] C. L. (Newcastle) has some black oak furniture, which badly needs cleaning, and asks for advice.

REPLY.—If the suite is very dirty it would be as well to give the woodwork a wash over with warm soap and water, using a leather for flat surfaces and a suitable brush for undercuts in the carving, afterwards freeing from all traces of soap by using clear warm water. When dry the following will be found a capital solution for cleansing and brightening the surface if applied with a sufficient allowance of what is generally termed "elbow grease":—1 gill best malt vinegar, $\frac{1}{2}$ gill methylated spirit, $\frac{1}{4}$ gill best linseed oil. Pour together into a bottle and shake well. If kept for any length of time a little extra spirit should be added when using to make good any evaporation that has taken place. The solution is also valuable

for brightening up any polished surface that has become dulled or sweaty.

Stand for Reading Lamp.

[374] F. J. G. C. (Gillingham) writes:—"I want to construct a stand for an electric reading lamp, to stand upon a table. I have no means for turning wood and so the work would have to exclude this operation. Will you please send me a suggestion? I should say height about 2 ft. to 2 ft. 6 ins."



FIG. 1.

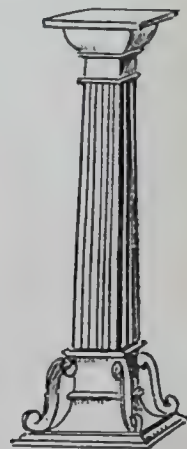


FIG. 2.

STAND FOR ELECTRIC READING LAMP (No. 374).

REPLY.—We offer a couple of rough suggestions for the stand you wish to make, either of which could be worked out to any suitable height that you think fit. The four uprights in Fig. 1 can be shaped and rounded with spokeshave, rasp and glasspaper from lengths of stuff $\frac{1}{2}$ in. by $\frac{1}{2}$ in., to be framed into the box below. The upper shelf can have a neat apron piece shaped as indicated, this being introduced as an extra stiffening. The lower platform can be notched at corners to receive the columns with a strip of astragal mould mitred round outside. A fret panel is introduced under on each side. This may be laid over a $\frac{1}{4}$ in. panel, or the panel of $\frac{1}{4}$ in. stuff itself can be fret-cut. A neat moulded base with projection of $\frac{3}{4}$ in. or so would look well, and small brass claw feet would enhance the effect. The light of course could be fitted under a shade as indicated, or might be fitted to the head of a statuette stood on the platform between the shelves. Fig. 2 might serve as an alternate idea to work upon and could be made in parts to be glue-plugged together. The shaft is intended to be reeded and there is not much in the detail that should prove difficult to get out, provided that the necessity to preserve a neat sharp finish throughout must be borne in mind if the result is to prove satisfactory.

Panelling.

How to Panel a Room.

OUR subject this month deals with a single room in which the walls are completely covered with panelling, the plinth at the bottom and the cornice at the top forming the finish. The room in question is a supposititious one, but we have the three walls in which are the necessary door, window and fireplace, and the one blank side in which no opening appears.

FIG. 1.—PANELLING FOR BLANK SIDE OF ROOM.

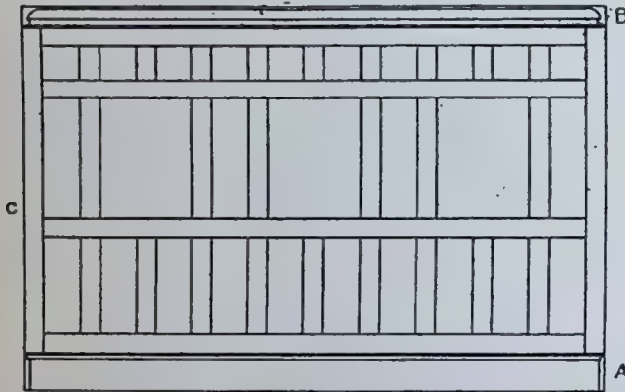


FIG. 2.—PANELLING FOR DOOR SIDE OF ROOM.

FIG. 3.—PANELLING FOR CHIMNEY END OF ROOM.

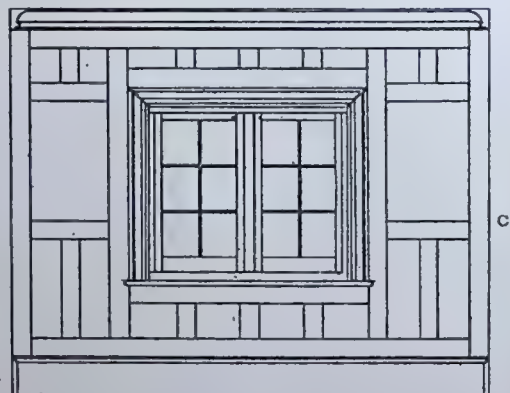
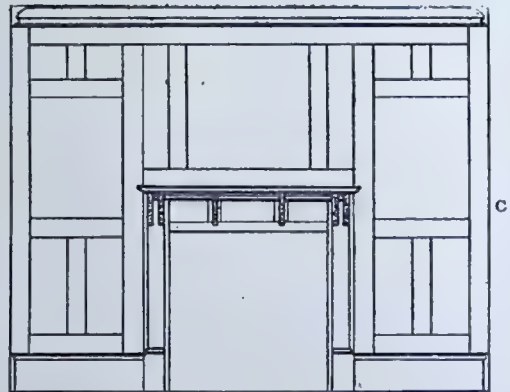


FIG. 4.—PANELLING FOR WINDOW END OF ROOM.

The latter is shown in Fig. 1, where A represents the plinth and B the moulded cornice, each of which will be fixed on to the front of the actual panelling, and will be the last pieces to be put into position. Of course they must be taken into account when the panelling is planned.

The two outside stiles (C) should run practically from floor to ceiling, standing on the former, and the four rails will tenon into them. The bottom and top rails will be of such a width that they will appear the same as the others when fixed; that is, if the other rails are 4 ins. wide these two should be 6 ins., thus allowing the plinth and cornice to bed on them 2 ins. This will give good fixing.

The second rail from the bottom should be about (or slightly over) chair height, so as to form a dado, and this portion should be fitted in with comparatively narrow panels of even width as shown. The upper row of panels, forming the frieze, should be filled in with the same width of panels on the dado, and the rail should be so placed that the height of these is equal to the width.

The middle row of panels may be broken up as shown by leaving out some of the mortises, which forms suitable recesses to take pictures, &c. This row should always have longer panels than the

The fire place end of the room is shown in Fig. 3, and of course the necessary chimney-piece must

enter into the calculations here; in fact, this is of the first importance, the panelling having to be built round it. We need not, however, enter into this at present, but take it as being finished.

The dado and the frieze at each side of the chimney-piece are the same at this end as at the sides of the room, and the middle space at either side of the fire is filled with one large panel. Over the chimney piece the frieze panels are dispensed with, the two narrow side panels and the one wide middle one filling the whole space, and giving the appearance of an overmantel.

Fig. 4 is the end of the room in which is the window, and here both the dado and the frieze panels are cut into. The treatment of such a case as this cannot be better than that shown, both the dado and the frieze being continued through but reduced in height, and the rails being framed in to suit.

It is obvious that panelling such as this cannot be made at the shop and fixed in the full-sized pieces. They would be too unwieldy to handle for fitting, and would also stand every chance of being smashed up during the fitting. It is, therefore, necessary that work such as this must be made in parts, in such a way that it may be fixed so as to appear in one piece, and the way to do this and the necessary setting out details we shall give in the next article.

(To be continued.)

Recent Additions to the Victoria Albert Museum.

Chinese Sculpture.

THE National Art Collections Fund has presented to the Victoria and Albert Museum two Chinese marble statues of unusual importance. These are life sized figures of Korean mandarins in ceremonial dress, carrying a casket and a scroll (perhaps for insignia and a patent of nobility), on elaborately carved bases. They appear to have formed part of a series of memorial statues on each side of the road to a tomb in North China, and are probably by a sculptor of the Ming period.

The Pearl Carpet of Baroda.

The Maharaja Gaekwar of Baroda, G.C.S.I., has lent to the Victoria and Albert Museum, South Kensington, one of the four magnificent panels which together constitute the celebrated "Pearl Carpet of Baroda." These panels were prepared in the reign of Khande Rao Gaekwar as an offering to the tomb of Mohammad at Madina. The most skilful embroiderers, as well as the master-jewellers of Baroda, were engaged for over three years (1866-1869) in completing this work. The rectangular panel of jewelled beadwork, at present exhibited in the Jewel Room of the Indian Section, displays in a lesser compass all the wonders of the whole carpet. It consists of an arabesque design embroidered in pearls and coloured glass-beads with applied gold bosses and studs set with *lasque* diamonds and cabochon rubies, emeralds and sapphires. In the centre a conventional full-blown flower encloses a large boss of soft gold mounted with a rosette of diamonds, the field filled in with jewelled *palmettes* and flowers proceeding from leafy stems scrolling,

encircling and interlacing on a close ground of iridescent seed-pearls. The deep border, executed in similar materials, exhibits, spaced at regular intervals, twenty-four diamond rosettes. The remaining panels of the "Pearl Carpet" are preserved, together with the "Pearl Veil," in the Regalia Room of Lakshmi Villas Palace in Baroda City.

Shavings as a Cause of Fire.

One of the best steps in fire prevention, which is being practiced at a well-known planing mill, is to see that the place is thoroughly cleaned of shavings and dust at quitting time each evening. When the whistle blows and the men leave the mill at night, you cannot find either shavings or dust anywhere, for the men whose business it is to clean up have been trained to do it thoroughly, and to do it every night.

Forthcoming Exhibitions.

We shall be glad if Secretaries will kindly send us early intimation of forthcoming Arts and Crafts Exhibitions.

April 2 to 4.—Uxbridge and District Arts and Crafts Society's Exhibition, to be held at the Town Hall, Uxbridge. Secretary, Mr. W. Daniels, The Institute, Uxbridge.

April 9 to 11.—Ripon Industrial Society's Exhibition (WOODWORKER Silver and Bronze Medals for Woodcarving.) Secretary, Miss L. C. Hay, 1, Princess Terrace, Ripon.

April 23 to 25.—Woodford Industrial and Art Society's Exhibition, to be held at the Lecture Hall, Woodford. Secretary, Miss Brodhurst, 20, Bryanston Mansions, York Street, London, W.

April 29 and 30.—Ashbourne Arts and Crafts Exhibition, to be held at Ashbourne, Derbyshire. Secretaries, Miss Bond, Alrewas House, Ashbourne, and Miss Wardle, Mayfield Hall, Ashbourne.

May 6 and 7.—County of York and East Riding of Yorkshire Arts and Crafts Exhibition, to be held at the Assembly Rooms, York. Secretaries, Mrs. Richard Lawson and Miss Saltmarsh, 44, Coney Street, York.

May 15 to 17.—Oxford Arts and Crafts Exhibition, to be held in the Town Hall, Oxford. Secretary, Mrs. Parker, Alverstoke, Iffley Road, Oxford.

May 28 and 29.—Essex Handicrafts Association Exhibition, to be held at Winter Garden, Clacton-on-Sea. Joint Secretaries, Miss Edith Newman and Miss Hilda Ackers, Bank Chambers, Clacton-on-Sea.

Oct. 13 to 18.—Sunderland Arts and Crafts Association Exhibition, to be held at the Victoria Hall, Sunderland. Secretary, Mrs. Gordon Bell, St. Bede's, Sunderland.

In applying to Secretaries for schedules and particulars, a penny stamp should be enclosed for postage.

NOTE.—Articles on Wheel Making and Simple Forms of Woodcarving have been unavoidably held over till next month.

Bent Ironwork Grille.

BELOW we give an illustration, and on the opposite page the full-sized details, of a handsome panel suitable for carrying out in bent iron or brass, or in a combination of both.

The panel has an over all measurement of 15 ins. by 11 ins., and is suitable for a window grille, door panel, panel for cupboard, fire screen panel, and other purposes. The kind of metal used, the width and gauge necessarily depend to some extent on the particular use to which the panel is to be put. For a panel which, however, is to be of practical service as well as an ornament,

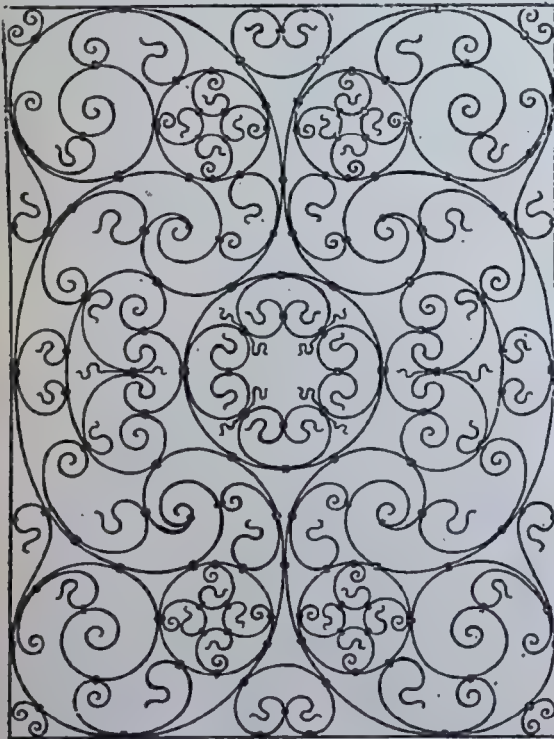


FIG. 1.—BENT IRONWORK GRILLE, 15 INS. BY 11 INS.

metal $\frac{1}{4}$ in. wide and about 1-32 in. in thickness will do. An all-iron bent metal panel invariably looks well, and there is no special reason here why brass or copper should be introduced. If either of these lighter-coloured metals is to be blended with the iron it might be used for the central circle (see A, Fig. 4), and for the six leading curves (B and C, Fig. 4). These seven features make up the leading lines of the design, and if picked out in brass the panel should have a fine effect.

The introduction of brass or copper on bent ironwork should never be done without consideration. Being of a brighter colour the yellow metal attracts the eye, and if the wrong forms are thus emphasised the design will lose some of its grace.

A fairly safe plan is to take a piece of tracing paper, lay it on Fig. 1, and trace off the parts which it is proposed to make in brass. If the effect is satisfactory, then the work may be proceeded with. Of course, the plan is frequently adopted of merely introducing little incidental features in brass or copper, but the present design does not lend itself to this treatment.

The outer rectangular border will be rigid, and should be provided with holes through which screws or nails may be passed for fixing the panel to whatever wood framing it may have. Such panels must never be sunk in a rebate. They should be framed as Fig. 2, the border of the iron panel resting against the inner edge of wood moulding. If the wood moulding should happen to have a rebate (as, in the case of a cabinet or outer door, it probably will) the rebate must be built up as *a*, Fig. 3, so that no part of the iron panel will be hidden.



FIG. 2.

FIG. 3.

Those who are accustomed to bent metal work, light or heavy, will find no difficulty with this design, particularly as a full-sized quarter design is given opposite. As a guide in getting out the metal required, the following sizes of the different parts may be given:—

A	..	13 ins.	J (16)	..	3 $\frac{1}{4}$ ins.
B (4)	..	26 $\frac{1}{2}$ "	K (4)	..	5 $\frac{3}{4}$ "
C (2)	..	22 "	L (4)	..	8 $\frac{3}{4}$ "
D (4)	..	5 $\frac{1}{4}$ "	M (2)	..	12 $\frac{3}{4}$ "
E (4)	..	2 $\frac{3}{4}$ "	N (2)	..	13 $\frac{3}{4}$ "
F (2)	..	9 "	O (2)	..	5 $\frac{1}{4}$ "
G (4)	..	8 "	P (2)	..	2 $\frac{1}{8}$ "
H (4)	..	5 $\frac{1}{2}$ "	Q (4)	..	8 $\frac{1}{2}$ "
I (4)	..	7 $\frac{1}{4}$ "	R (4)	..	2 "

The size of the circle A is of course important, but after this the four upper and lower curves B and the two side curves C must have the first consideration. Each B and C curve starts from a common spiral, and a neat collar joint is necessary at these parts. The tendrils D branch off at a tangent from B, the joint being on the border line. E, F, G, H, K and L are fill-up forms which may be added after the main lines are in. M and N, again, are more important, the latter four calling for careful bending. P is a dividing bar. I, with its interior parts J, is a fill-up, and O separates the long side curve C from the shorter one M. The central circle has for fill-ups, Q, these being separated by the bar R.

Collars should be clamped where shown for satisfactory fixing, and the iron should have the usual coat of egg-shell black paint. If brass is introduced it should be lacquered.



FIG. 4.—FULL-SIZED DETAIL OF ONE-QUARTER OF BENT IRONWORK GRILLE.

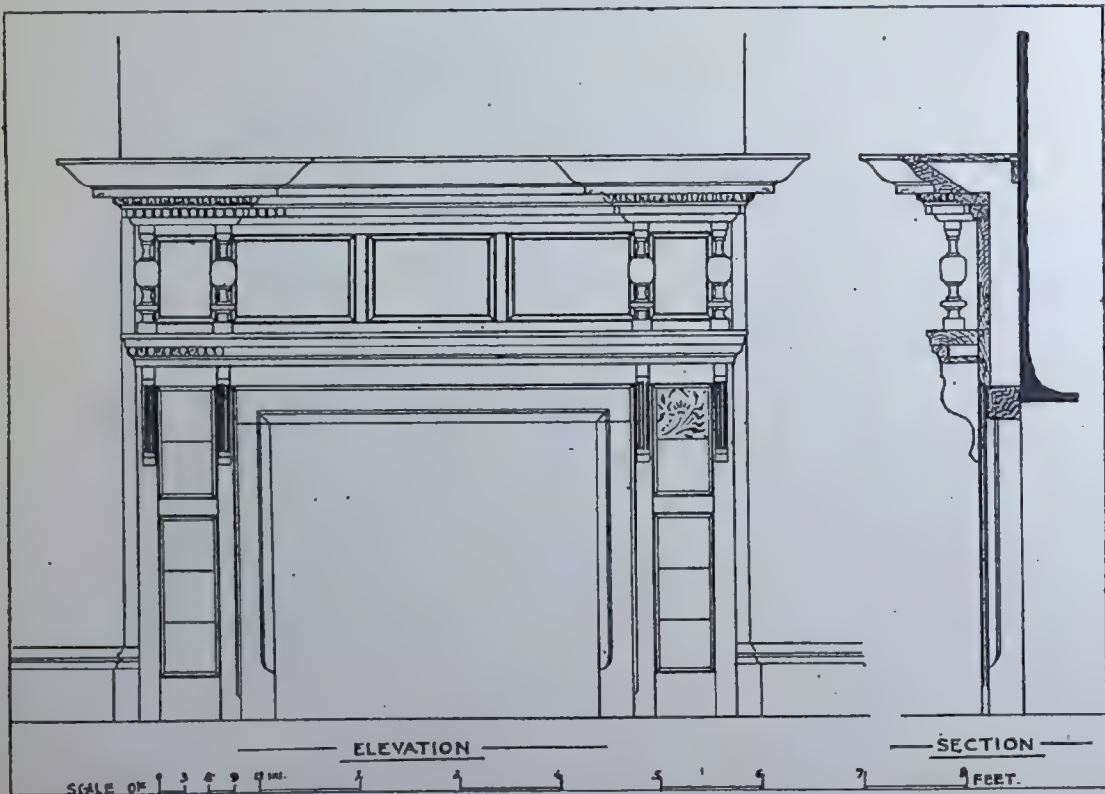
The Drawing Room.

Method of Finishing Fireplace.

THE art of finishing a fireplace opening in any reception room will always be a matter of discussion. A simple design—that is, not over moulded, but bold and well defined—is the one that pleases. A finish of this nature is here illustrated, consisting of the ordinary fireplace opening with marble edging and curb mitred and stop moulded in line with skirting. The jambs and frieze are finished upon a framed backing in black walnut, panelled and lightly moulded.

The Scent of Woods.

Scent is often a very valuable aid to the identification of wood, but its utility is lessened by the difficulty and often the impossibility of so describing an odour that one unfamiliar with it would be able to recognise it. Such descriptions are necessarily limited to comparisons with well-known scents of drugs and oils, and these indeed may have been derived from the wood in question. The scent of yellow pine wood is resinous or like turpentine; that of Spanish pine suggests beeswax; that of most cedars is aromatic like cedar oil; that of incense and yellow cedars and sassafras, spicy-resinous; that of dark-coloured, waxy specimens of bald cypress, like rancid butter; that of catalpa, somewhat like kerosene oil; that of Eastern hemlock is mildly rancid and unpleasant. The list might be greatly extended



USEFUL DESIGN FOR DRAWING ROOM MANTELPIECE.

The panels formed in two heights to the jambs are filled in with three and two blue tiles respectively. The pattern of tile used by the writer is shown in the right hand top corner of jamb to fireplace. The framework consists of one inch bass wood, painted prior to fixing, to which the various sections as shown are fixed and the mouldings securely planted thereon. The brackets project 6 ins., and the mantelshelf 14 ins. When polished the effect of this piece of work as a finish to a drawing-room fireplace is remarkably fine.

since almost every wood when fresh possesses in some degree a characteristic scent, though in a great many cases it is so weak or fleeting that it escapes notice. Rosewood and satinwood are well known woods with a pronounced fragrance.

Woods with a Violet Smell.

A few woods have a well defined violet odour. The best known is the *Acacia homalophylla*, generally known as Myall wood. It gives off its fragrance as long as the wood remains unpolished. It is a tree very common in the deserts of the interior of Eastern and South-eastern Australia.

Carved Picture Frame.

An Artistic Wall Ornament, Combining a Carved Panel Frame with a China Shelf.

AS a change from the usual type of elaborately decorated frame which some woodcarvers delight to work for pictures, we give here a comparatively simple design for a frame with two carved pilasters and a china shelf above. A full-sized diagram for the carved panels is given in Fig. 11. The general woodwork is in no way difficult, and those who go in for carving alone, without touching cabinet-work, will have little trouble in getting a craftsman to make up their work. In this case, however, it is well to consult the cabinet-maker before the wood for the panels is cut; otherwise there may be a difficulty in framing.

$\frac{3}{4}$ in. Particulars of sizes of this border are given at Fig. 7.

A second method is shown at Fig. 5. The wood for the panel will again be 9 ins. by 4 ins., and either $\frac{1}{2}$ in. or 1 in. thick, according to the relief desired for the carving. The background will be sunk $\frac{1}{4}$ in. or $\frac{3}{8}$ in. (that is, till the ground wood is $\frac{1}{2}$ in. thick at the edges), and a slip mould like Fig. 7 mitred and planted on.

Another alternative, as Fig. 6, is to make a separate frame, 9 ins. by 4 ins., 1 in. thick, and $\frac{3}{4}$ in. wide, rebate the edges and fix the carved panel as shown. In this case the wood for panel need be only 8 ins. by 3 ins., and need not exceed $\frac{1}{2}$ in. in thickness. It will, of course, be understood that Figs. 4, 5 and 6 are drawn to a reduced size. Sections 7, 8 and 9 are given full size.

Those who go in for carving only will probably adopt the solid method (Fig. 4), but those who combine carving with cabinet-work may prefer

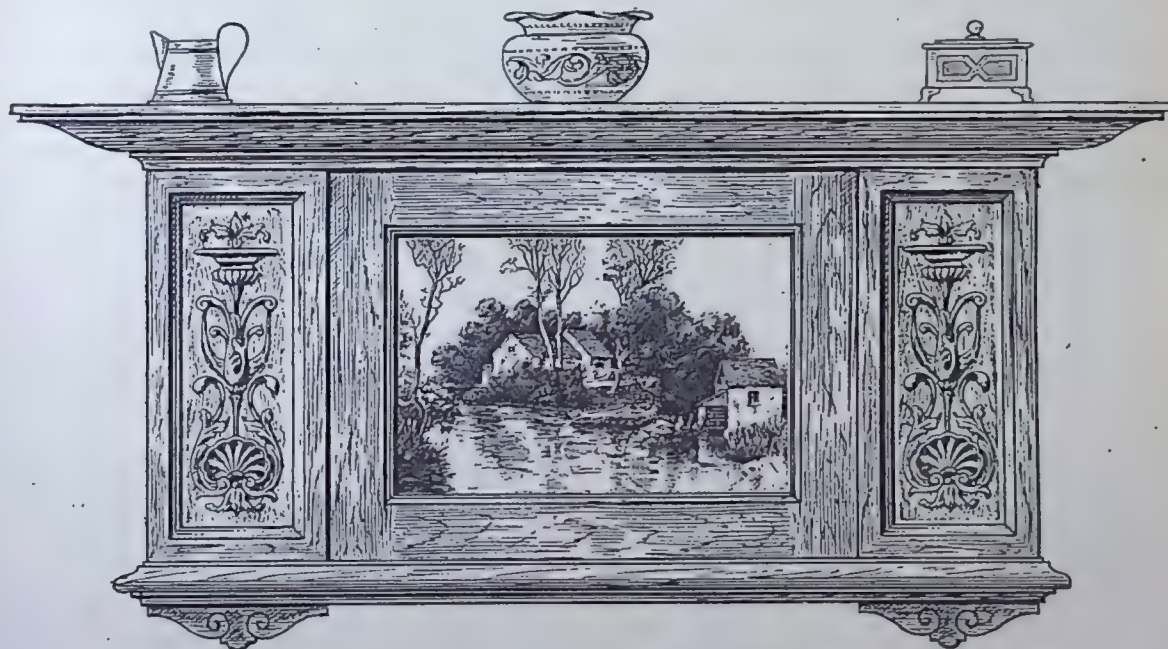


FIG. 1.—EASILY MADE PICTURE FRAME, WITH CARVED PILASTERS AND WITH CHINA SHELF.

In the first place we may deal with the carved panel, as (if the design shown is adopted) this represents a fixed size. The panel shown at Fig. 11 is $7\frac{1}{2}$ ins. by $2\frac{1}{2}$ ins. It will be noticed from Figs. 1 and 2, however, that the carved panels are framed to form pilasters, and this size ($7\frac{1}{2}$ ins. by $2\frac{1}{2}$ ins.) represents the daylight size within the moulding. The size over the framework is (as seen from Fig. 2) 9 ins. by 4 ins. Thus, before the wood for the panels is cut the method of framing should be decided upon.

Instead of framing the panel, the two pilasters may be solid, as section, Fig. 4. In this case the wood will be 9 ins. by 4 ins., and 1 in. thick. The border will be $\frac{3}{4}$ in. wide, the background being sunk

either of the alternatives. The inner back edge of pilaster should be rebated to take the stiles of centre frame. (See Fig. 8).

This central frame shows a width of 12 ins. between the panels (see Fig. 2), but this size may be increased (or lessened) to suit any particular picture that has been selected for the honour. The height is the same as the panels, 9 ins. The framing shows $1\frac{1}{2}$ in. wide, with an inner bead edge as Fig. 9, and the picture opening thus works out at 9 ins. by 6 ins., a useful size for a small autotype, photograph or photogravure. The thickness may be $\frac{3}{4}$ in. and the stiles and rails are framed up in the usual way. The stiles, it should be remembered, must be $\frac{1}{2}$ in. wider than the rails,

to allow for rebating to the end panels. It might here be said that, instead of framing up this central part like a door, flat picture moulding might be

(sunk and stopped) passed in from above. A groove for plates, etc., may be run on the flat top of the moulding if desired.

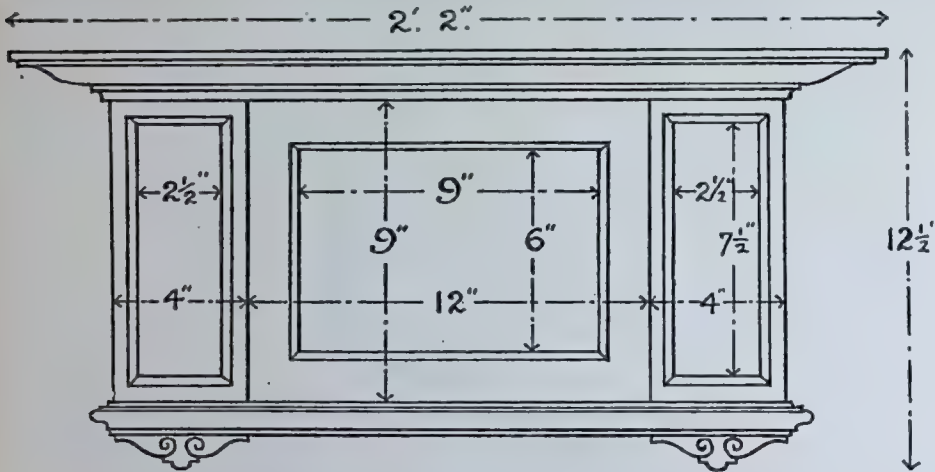


FIG. 2

OUTLINE FRONT ELEVATION, WITH DIMENSIONS.

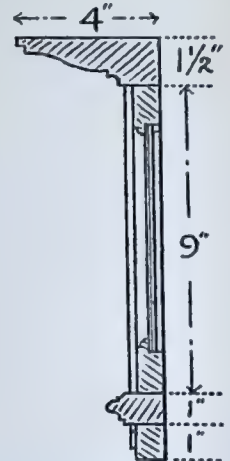


FIG. 3

SECTION.

used, and the frame doweled and glued to the carved pilasters. The picture will be glazed and fitted with a backboard as in ordinary picture framing.

The bottom moulding may be 1 in. thick and 1 1/4 in. or 2 ins. wide. It also is returned at the ends in the solid, and may be screwed in position from below. The drop pieces below the pilasters

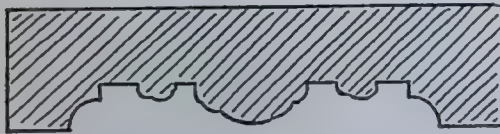


FIG. 4



FIG. 5



FIG. 6

SECTIONS OF ALTERNATIVE TREATMENTS OF THE CARVED PILASTERS. (THESE THREE SECTIONS ARE NOT FULL SIZE)

The cornice, with heavy projecting moulding, is 2 ft. 2 ins. long, and 4 ins. wide, returned at the ends in the solid. As the extreme thickness of the pilasters is 1 in., the projection of cornice will be 3 ins. A thickness of 1 1/2 in. will do, and the cornice may either be doweled in, or fixed with screws

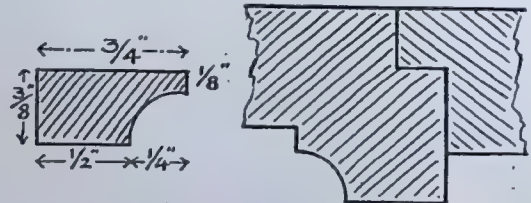


FIG. 7



FIG. 8

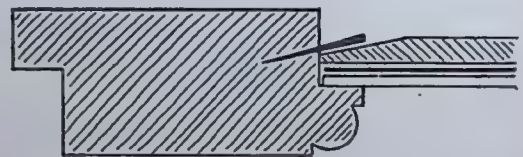


FIG. 9

DETAILS OF FRAMING, ETC. (FULL SIZE).

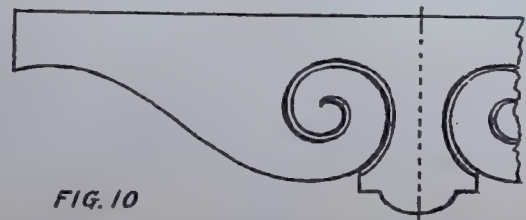


FIG. 10

DETAIL OF DROP PIECE BELOW PILASTER. (FULL SIZE).



FIG. 11.—FULL SIZE DETAIL OF CARVING ON PILASTERS.

may be traced from Fig. 10. They are 4 ins. wide, 1 in. deep, and 1 in. thick, and may be glued to underside of bottom mould immediately below the pilasters. The little touch of carving on these is simply incised work.

The best wood to use is oak or dark walnut. Oak should be slightly darkened, and the finish should in either case be dull. The carving on the panels may have a relief of from $\frac{1}{4}$ in. to $\frac{3}{8}$ in., according to the worker's treatment of the ornament.

The article can be fixed to the wall with a pair of stout brass bracket eyes, and if placed so that the top of the picture is practically level with the eye it will have a handsome appearance, especially if hung above a cabinet or dwarf bookcase, or over a mantelpiece.

The Mortise Joint.

When a man is making a glue joint between two boards he knows he must take infinite pains that the wood may fit closely together all along the length of the joint and width of the wood. In making a mortise and tenon joint, we should bear in mind that by right this should be a true glue joint, for generally glue is the agent that holds it together. It is not enough to make the shoulders of the tenon fit snugly against the joining piece, so that it will make a neat-looking job, but the tenon should fit from end to end, so that when inserted with glue it will hold well. In making dowel joints it is comparatively easy to get a round hole and a dowel pin that will fit snugly together, and this is why the dowel joint holds so well for its size. With a perfect mortise it is comparatively easy to make the tenon fit snugly from end to end, it being only a matter of taking pains to get it to exact thickness, and of sizing to the right width so that it fits both sidewise and edgewise. The mortise is the starting point, and the right idea in making mortises is to consider them as glue joints and do the work accordingly.

Hints on the Construction of Windows.

Window-making, like the construction of doors and the building of stairs, is a branch of woodwork that the amateur too often leaves to the regular carpenter or joiner. Even if his ambition is limited to the occasional repair of a window-sash or a pulley cord, however, it is worth his while to know exactly how the thing is done. Sixpence will buy the thoroughly practical and useful handbook, "Window-Making" (in THE WOODWORKER series), which deals fully with casement frames, casement sashes, cased sash frames, vertical sliding sashes, horizontal sliding sashes, bay windows and Venetian windows. Everyone knows that many of the present-day windows are of hopeless inferior quality, and numerous competent apprentices and amateur wood-workers would gladly attempt their own window-making if the necessary plans and instructions were within their reach. With this sixpenny handbook as a guide they have all the information they require, and with the 120 practical diagrams every detail is made clear to them. What is almost of equal value is that a study of the book will enable them to repair loose and draughty windows and thus add to the comfort of the home. Price Sixpence, or post free for Sevenpence, from THE WOODWORKER AND ART CRAFTSMAN, 57, Farringdon Road, London, E.C.

Jewel Casket.

With Photographs of the Finished Work.

THE casket illustrated here will appeal to those who require an article in which jewellery and other valuables, as well as private correspondence, can be securely and conveniently kept. When carefully made and well polished it forms a handsome piece of workmanship, and it is by no means difficult to construct.

The various pieces of moulding, &c., used in building up the shape of the casket, in addition to being glued are screwed into place, thus making it impossible for them to become detached, even if the casket gets damp. The material used may be either oak, walnut or mahogany, but oak is preferable.

The foundation of the body is made of $\frac{5}{8}$ in. stuff, planed and finished to $\frac{1}{2}$ in. The measurements are:—Length, 16 ins.; width, $8\frac{1}{2}$ ins.; depth, $7\frac{1}{4}$ ins. The ends are doweled, as shown in Figs. 4 and 5.



FIG. 1.—JEWEL CASKET—CLOSED.

After the joints have been made and glued up, a full inch is marked off all round from the top; and this portion, which will afterwards form the framework of the cover, is carefully sawn off. The baseboard is next prepared by cutting a piece of the $\frac{1}{2}$ in. material to $18\frac{1}{2}$ in. by $10\frac{1}{2}$ ins., and rounding the edges. This is glued to the body and screwed to each corner. Strips (A, Fig. 6) are mitred and fastened to the upper part of the baseboard, with their edges against the sides of the body. Pieces (B, Fig. 6) are fixed on top of A in the same way, followed by C and D.

The cover should now be proceeded with. Take the frame piece sawn off from the body, and trim up the top and bottom edges. Make a set of pieces (E, Fig. 6), mitre, and fix horizontally on the top edge of the cover-frame, with the inside edge flush with the inside of the frame. Form pieces (F, Fig. 6) and fasten on top of E. The rebate on top of F serves for the top board to fit into, the latter being made with rectangular edges. Moulding similar to B is placed on the under side of E, and finished off with beading (C), the latter coming flush with the bottom of the cover-frame.

A good quality desk lock is now fitted to the body, also an escutcheon of the plate variety (G, Fig. 7), after which the strips (D, Fig. 6) are fastened level with the top edge of the body, the front piece being cut to fit around the escutcheon if necessary. Hinge the cover and body together with a pair of good $1\frac{1}{2}$ in.

or 2 ins. brass butts, afterwards fitting the link plate of the lock to the cover.

Stays will be required to keep the cover in position when open. These may be bought or can easily be

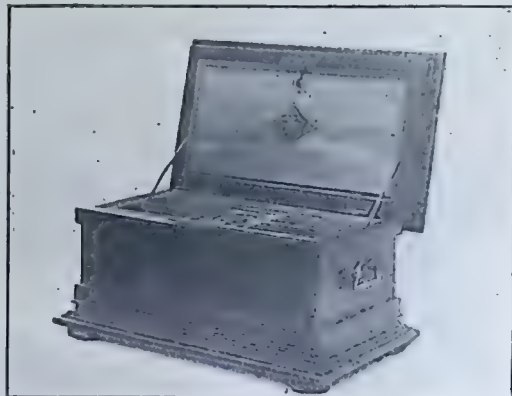


FIG. 2.—JEWEL CASKET—OPEN.

made of 1-16 in. brass, cut to the shapes and sizes shown at H, Fig. 7. Rebates, $3\frac{1}{4}$ ins. long, $\frac{3}{8}$ ins. wide and $\frac{1}{4}$ in. deep are made on the insides of the ends of the body, and rebates, $2\frac{1}{4}$ ins. in length, 1-16 full in width and $\frac{1}{4}$ in. in depth are made in the corresponding inside parts of the cover, the cuts in both cases commencing $1\frac{1}{4}$ in. from the inside ends nearest the hinges.

The wood lining for the sides of the body is now prepared. This is made of plain 3-16 in. fretwood (not three-ply), one edge being half rounded and the ends mitred. A piece of velvet is glued to the bottom and the wood lining afterwards fastened into its place around the sides.

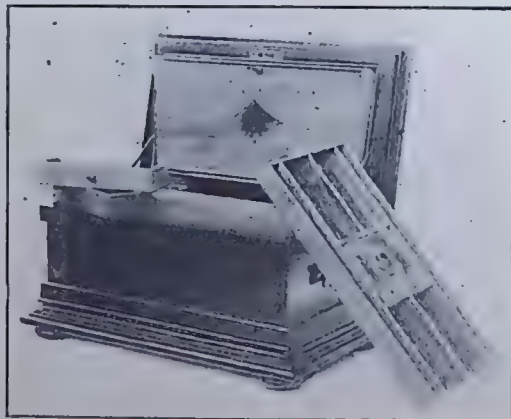


FIG. 3.—SHOWING TRAY, DRAWERS, ETC.

The inside fittings are next constructed. The tray consists of 3-16 wood, with sides and divisions 1 in. in height, the ends being mitred and veneer-keyed.

Velvet is glued to the bottom (top side) before the divisions are fastened into position, and if desired

velvet may also be glued to the underside of the bottom. Small half-round pieces of wood fastened on each end of the inside of the body serve for the tray to rest upon. Drawers similar to those shown in Fig. 3 may be fitted, or the bottom may be left clear.

The letter rack and the feet now remain to be done. The latter may be turned as I, Fig. 7, or made square, the bottoms being covered with velvet or leather.

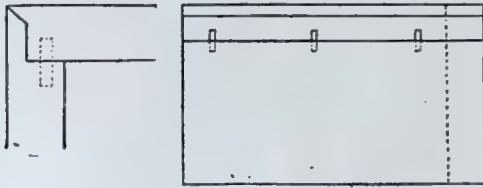


FIG. 4. FIG. 5.—DETAIL OF ENDS.

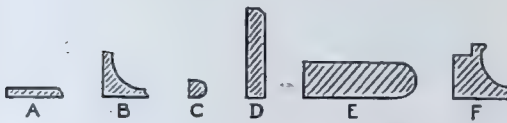


FIG. 6.—DETAIL OF MOULDINGS.

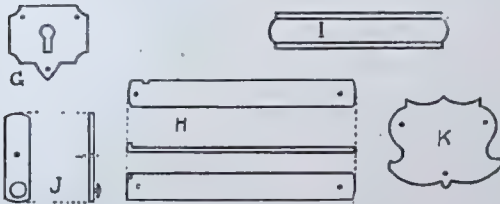


FIG. 7.—DETAIL OF FITTINGS.

For the letter rack take two pieces of wood, one the same size as that used for the bottom of the tray, and the other $\frac{1}{2}$ in. narrower. Make sides $1\frac{1}{2}$ in. deep, leaving the top end open. Let the sides project in front about 3-16 in., and round off the edges; fasten all together with small brass screws, hinge to the bottom edge of the cover-lining, and make a small fastener for the top. J, Fig. 7, is a simple pattern. Fasten a strip of strong cloth between the back and the cover board to prevent the rack falling forward.

A nameplate (K, Fig. 7) may be fixed to the front of the rack if desired, or this may be inlaid. All the woodworking part being now completed, the exterior should be prepared for polishing, after which latter operation a pair of brass handles, fitted to the ends, puts the finishing touch to an interesting, useful and superior piece of work.

Wasted Wood.

The most expensive wood is that which is put to wrong use, and both wood and work have to be thrown away.

Sawdust.

People are finding so many uses for sawdust these days, and there has been so much progress in distilling waste generally, that the waste in wood-working is beginning to take on some specific value which should mean a source of revenue in the future.

A Rare Chinese Wall Paper.

On the walls of the directors' room of a well-known London bank is a famous hand-painted Chinese wall-paper. This paper is painted in natural colours upon a brownish-yellow ground, the whole mellowed down by time. The general effect is one of extreme richness and interesting repose. It is a most eloquent refutation of the argument for plain walls advanced in some quarters, and an example of a priceless wall-paper. This remarkably fine old paper was taken off the walls of the drawing-room at Coutts' old bank in the Strand and removed to their new building opposite the Charing Cross Station in 1905. Though this removal was an infinitely delicate and difficult operation, it was accomplished successfully. The paper was brought over to England by Lord Macartney, the first British Ambassador to China, who returned in 1792. He took many presents to China with him and brought back many, including this set of painted papers, which he presented to Mr Coutts, the banker.

They remained on the walls of the drawing-room in the old bank from that date until the removal to the new building. The room is about 20 by 30 feet and the height covered by the paper, from the dado to the cornice, is about twelve feet. The decoration begins at the base of each breadth of paper with figures and objects of fair size representing streets and waterways. The design gradually diminishes in scale until the mountain tops are reached near the cornice of the room. Hundreds of figures are introduced into the scenery. The manners, customs and industries of the Chinese are portrayed in every possible manner. In addition to depicting the important industries, such as silk spinning, tea cultivation and fruit drying, this paper shows the daily life of the bazaar, the marketing, the driving of cattle, and an endless variety of subjects painted with the utmost care and detail.

Influence of Japanese Art.

We have been more or less unconsciously absorbing the subtle spirit of Japanese art for many years, with the result that many of our modern designs are closely allied to Japanese work in principle, though they may contain no trace of typical Japanese forms. The world is in a receptive attitude concerning Japanese decoration. In Germany some delightful treatments have been conceived and executed. In England, the works of Sir William Chambers and the adaptation of Chinese principles by Chippendale had made easy the reception of Japanese forms which have been in vogue for many years. In America, and even in France there is a distinct leaning toward the Japanese in certain forms of furnishings, and there is, perhaps, no style which offers the decorator a more interesting field.

Camphor Wood.

There are a number of foreign woods which possess a very strong smell of camphor. One of these is the true camphor tree (*Cinnamomum camphora*) of Japan, Formosa and China. This tree is the source of most of the camphor of commerce, which is obtained by destructive distillation. About eleven million lbs. of camphor are consumed annually, principally in the manufacture of celluloid. The wood is often employed for entomological and ornamental cabinets, and there appear to be good grounds for believing that the camphor odour is very efficient for repelling insects. Renewed attempts are being made to grow the trees in commercial quantities in southern Florida.

Design Suggestions.

Inlaid Dutch Panels.

ON the opposite page are given two design suggestions of Dutch panels, suitable for inlaying. The designs are full-size ($7\frac{1}{2}$ ins. by $2\frac{3}{4}$ ins.), but it will of course be recognised that the outline represents merely the line of the pictorial inlay itself and that, if used for a door, there will be a margin of about an inch at each side, with a boxwood line or narrow chequered band run in to form an inner panel. Thus the daylight size of each panel may be taken as not less than $9\frac{1}{2}$ ins. by $4\frac{1}{2}$ ins.

Two suggestions for using these designs are offered here. Fig. 1 is a double door hanging cabinet, measuring approximately 22 ins. over the cornice and 19 ins. high. The size will depend on the treatment of the doors, and these may be considered first. The size ($7\frac{1}{2}$ ins. by $2\frac{3}{4}$ ins.) marked on the left hand door indicates the pictorial inlay, the border *a* being a narrow chequered band. The size on the right hand door ($9\frac{1}{2}$ ins. by $4\frac{1}{2}$ ins.) is the daylight opening within the moulding—that is, the actual size of panel. In cutting, an extra $\frac{1}{2}$ in. each way must be allowed for the rebate. The doors may be framed up with stiles and rails, $1\frac{1}{2}$ ins. by $\frac{3}{4}$ in., thus bringing the door to $12\frac{1}{2}$ ins. by $7\frac{3}{4}$ ins. The two inner stiles may be each $\frac{1}{4}$ in. wider, to allow for a $\frac{1}{2}$ in. astragal. Thus the total width over the doors will come out at 16 ins.

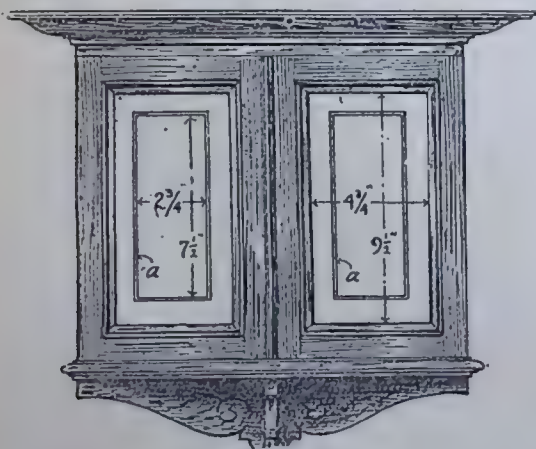


FIG. 1.—HANGING CABINET, WITH INLAID DOOR PANELS.

The cupboard bottom may be $\frac{3}{4}$ in. thick, moulded as shown. Below, at the back, is a shaped apron piece, 16 ins. by $3\frac{1}{2}$ ins. and $\frac{1}{2}$ in. thick, and a central shaped bracket, $\frac{5}{8}$ in. thick, may be added as indicated. The doors will hinge on the ends, which may be 7 ins. wide and $\frac{5}{8}$ in. thick. A front rail, about $\frac{1}{2}$ in. wide; is shown above the doors. A cornice $1\frac{1}{2}$ ins. or $1\frac{3}{4}$ ins. deep, and projecting about 3 ins. will

give a good finish to the cabinet. This may be built up and mitred at the front corners, a dust-board being added. An inner shelf, $\frac{1}{2}$ in. thick, will provide a stop for the doors.

Carried out in oak, fumed (or otherwise slightly darkened), with a quiet combination of colours for the inlays and finished dull, such a cabinet would look very handsome.

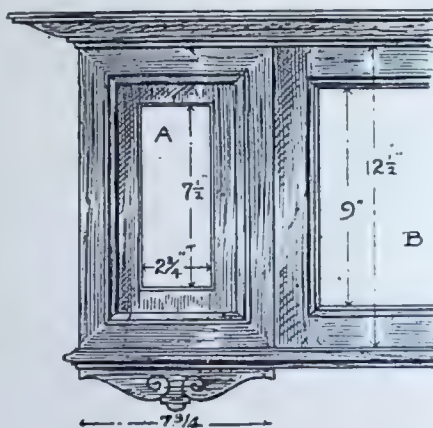


FIG. 2.—PICTURE FRAME WITH INLAID END PANELS.

The second suggestion (Fig. 2) is on the lines of the carved picture frame illustrated on page 97. The design as shown on that page could be followed almost exactly as described, as the inlays are practically the same size as the carved panel given for the end pilasters. It will be much better, however, to adopt the plan just suggested for the cabinet doors, and increase the daylight size of panel to $9\frac{1}{2}$ ins. by $4\frac{1}{2}$ ins., with a box line or chequered band separating the inlay (A) from the plain margin. If $1\frac{1}{2}$ ins. wide framing is used, the end panels will come out at $12\frac{1}{2}$ ins. high by $7\frac{3}{4}$ ins. wide. The shaped piece below will be about $1\frac{3}{4}$ ins. deep and $7\frac{3}{4}$ ins. wide.

For the centre panel (B), $1\frac{3}{4}$ ins. wide framing may be taken, the daylight size for picture thus being 9 ins. high. The width may be as desired, but for a good proportion it should not be less than 12 ins.

The colouring of the inlaid panels is largely a matter of taste, but a few suggestions may be offered. The cap and apron of the girl should be white (say holly); a little white, perhaps on the cravat, should also be introduced on the boy panel. For the faces, hands and clogs whitish-yellow wood, such as maple, may be used. Satinwood will form a good sky background, whilst for the ground a piece of streaked satin-walnut (grain horizontal) may be taken. The windmill may be of silverwood, with touches of dark walnut and rosewood for the trees. The girl's dress may be a dark stained blue, with some yellowish wood for the basket. The boy's knickerbockers and cap must be dark, but a red wood may be taken for his blouse.



FIG. 3.—LEFT-HAND INLAID PANEL (FULL SIZE.)



FIG. 4.—RIGHT-HAND INLAID PANEL (FULL SIZE.)

Recent Books and Magazines.

Home Decoration.

"HINTS ON HOME DECORATION." Seventh Edition, revised. Sixpence. (Decorators' Supply Stores, Trafalgar Square, Blackpool.)

This is a useful little handbook forming a complete guide for decorating. It deals with painting, enamelling, graining, whitewashing, colour-washing, staining, varnishing, polishing, paper-hanging, window decoration, imitation stained glass, sign and ticket writing, stencilling, dyeing, etc., etc. Numerous recipes are given, and there is a complete index. The handbook is written chiefly for the amateur, and the numerous hints are well worth the modest sixpence at which it is issued. Price lists of materials, etc., are added.

Art and Crafts.

The February number of *The Studio* has a second article on the recent exhibition of the Arts and Crafts Society, held at the Grosvenor Gallery. There are some excellent photographs of metalwork, including the Level, Trowel and Mallet, used by the King in laying the foundation stone of the National Library of Wales, a finely-designed wrought silver tea service, and a coffee set in bronze gilt. There is also a photograph of a capital dresser in chestnut, exhibited by Messrs. Heal and Son. Of the coloured plates in this issue of *The Studio* special mention should be made of a full page plate of Chinese charms and amulets in agate, jade, coral, malachite, lapis lazuli, turquoise, etc.—a remarkably fine example of colour reproduction and printing.

Walter Crane's Books for Children.

The Imprint for February (No. 2 of this new monthly) has a good deal to say about children's books. Mr. Walter Crane writes on "Notes on My Own Books for Children." Mr. J. H. Mason has an article on "The Printing of Children's Books," and Miss Alice Meynell and Mr. William Foster deal with the question of illustration. There is in this number a useful and instructive article on pen and wash drawing for reproduction.

Art Treasures.

"THE ART TREASURES OF GREAT BRITAIN." Edited by C. H. Collinson-Baker. Parts I. and II. Size 12 ins. by 9½ ins. One shilling net each. (J. M. Dent and Sons, Ltd., Bedford Street, London, W.)

In this new series Messrs. Dent and Sons' aim is to give a representative collection of reproductions of the masterpieces of art actually in the British Isles. Judging from the contents of those two parts there is apparently no intention to include—at least in any considerable proportion—numerous works of art which have appeared in other serials, but rather to reproduce some of the equally fine, if less well known, objects of art to be found in public galleries or museums and in private collections throughout the kingdom. Thus in Part II. there is a beautiful Chinese vase, in colour, from the Salting collection in the Victoria and Albert Museum, whilst in Part I. there is a reproduction of a XIV. century French ivory of the Madonna and Child. The plates are finely reproduced, and the parts are so bound that any illustration may be removed for framing, if so desired. Seven plates are included in each part, and painting, sculpture,

drawings and other objects of art will all receive attention.

Educational Handwork.

The March number of *Educational Handwork* (3d.) appears in a new and attractive form. This magazine, edited by Mr. George F. Johnson, whose well-known handbooks on various subjects we have previously reviewed in these columns, is the official organ of The Educational Handwork Association, and deals not only with the theory of handwork education, but also with the practical teaching. In the March number, for example, there is an article on Clay Modelling by the Headmaster of the "John Gulson" School, Coventry. Mr. R. F. Wooton writes on School Handwork, giving suggestions on the making of model bridges. An article on Split Sticks will be found of use by those who have scout pupils, and Mr. P. Baxendale's chapter on windmills and weather vanes is interesting. Other subjects dealt with are on Primary Drawing, Handwork and Geography, Nature Study, The Insects of Timber Trees, Handwork and Architecture, etc. There is also full current news as to the Educational Handwork Association and its branches. The magazine is published by Percy Lund Humphries and Co., Ltd., 3, Amen Corner, London, E.C., who will send a copy post free for 4d.

"Handicrafts for Boys."

THE April issue of *Handicrafts for Boys*, which has just been published, contains a descriptive article, with illustrations on making a model gate. Among much other interesting matter there are articles on how to make a step ladder, trestle, occasional table, kite winder, etc. Single copies may be obtained from the Publishing Offices, 57, Farringdon Road, London, E.C., for 1d., post free; two copies, 1½d., post free. This little magazine is specially recommended for use in woodwork classes of Elementary Schools. Particulars for the supply of quantities will be sent to Manual Training Teachers upon application. Volume No. 1, 1912, strongly bound in limp cloth, containing nearly 200 pages of illustrated articles on Model and Toy Making, Light Woodwork, etc., cost 1s. each, post free 1s. 3d.

EDITORIAL NOTICES.

Contributions.—The Editor invites correspondence and original contributions on all subjects relating to woodwork and other handicrafts. All MSS. should be accompanied by a stamped and addressed envelope for return if unsuitable.

Books for Review, price lists, tools, materials, etc., sent for inspection, enquiries and all correspondence relating to the literary portion of the Magazine should be addressed to the Editor.

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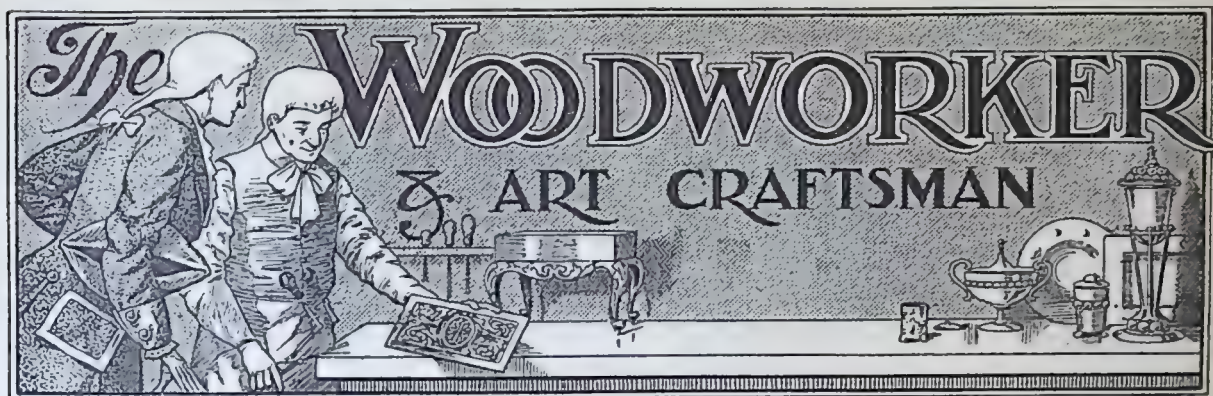
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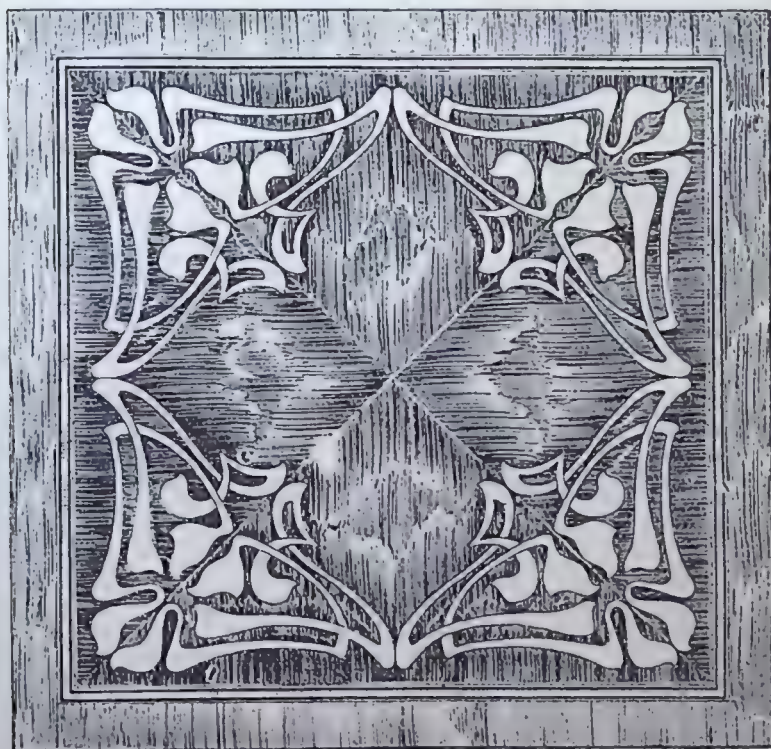
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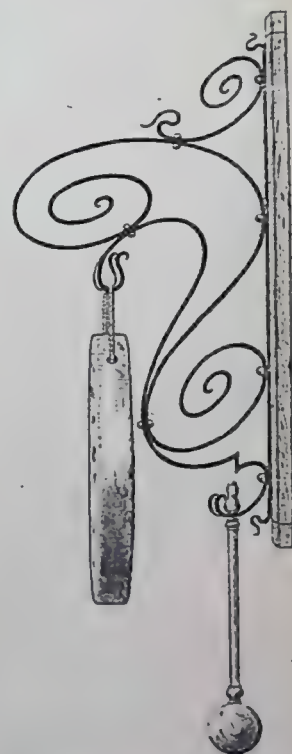
DESIGNS FOR THE MONTH.

INLAID TABLE TOP. WROUGHT IRON GONG BRACKET. CARVED BRACKET.

OUR Design Supplement for this month includes three full sized patterns: (a) bracket for a gong and beater; and (c) a small bracket for relief carving. All three are practical,



INLAY DESIGN FOR TABLE TOP OR TRAY.
16½ INS. SQUARE.



WROUGHT GONG BRACKET.
16 INS. BY 7½ INS.
(See page 107.)

an inlaid design, suitable for an occasional table or a tea tray; (b) a light wrought ironwork and the inlay and ironwork patterns may easily be adapted for use in other ways than those

indicated. The gong bracket is described on the following page and the carved bracket on page 108.

Inlaid Table Top or Tray.

The inlaid design is suitable for a table top or a tray about $16\frac{1}{2}$ ins. square. In the case of a table the over-all size might if desired be kept larger, a wider margin being permissible. For a tea-tray it is not advisable to increase the dimensions. The decorative ornament, however, is essentially suitable for centring, and might be used for any large surface.

Two white woods (not too bright), or two yellows, or a combination such as satinwood and silver-grey, would do, but as each corner ornament, although composed of two general forms, is complete in itself, care must be taken not to use contrasting woods which will tend to separate these interlacing forms.

If the ground is patterned, a border line will be required. This may be a band or a single thin line as preferred. Should the ground be left plain a border may be used or dispensed with as desired. On the design sheet a band is indicated. In selecting this band the colour of woods used

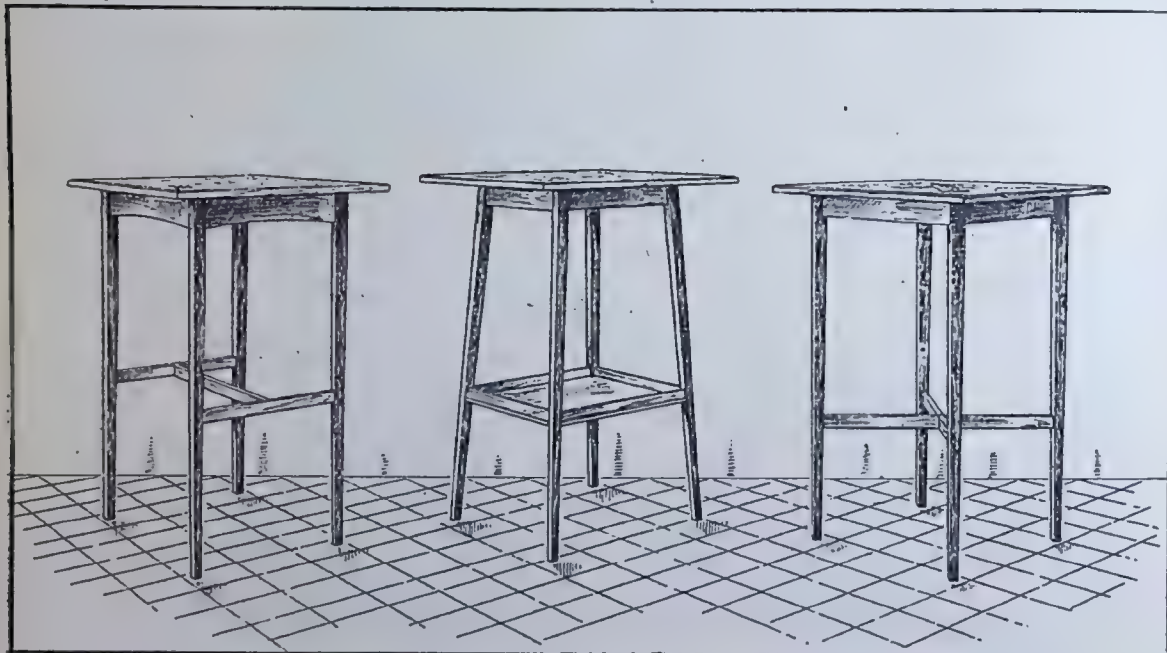


FIG. 1

FIG. 2.

FIG. 3.

SUGGESTIONS FOR OCCASIONAL TABLES SUITABLE FOR INLAID DESIGN AS ON PAGE 105.

The space covered by the ornament is 13 ins. by 13 ins., each corner being a double repeat. In our sketch here the background is shown patterned, and undoubtedly the best effect is obtained by this arrangement. In a recent series of articles* on veneer laying and on the use of veneers in design directions for this kind of work were given, and detailed instructions need not therefore be given. For the background nicely figured mahogany always looks well, and only two colours are required for the ornament. It ought to be said that these two colours must not contrast violently. Different woods are desirable in order to give a little variety to the pattern, but obviously the character of the design will be spoiled if the colours differ widely in tone.

for the inlaid ornament will of course be taken into consideration.

Suggestions for Tables.

As the inlay will be seen to the most advantage if used as a table top, we give here three sketches of easily made tables suitable for the design. In each case the top is taken as $16\frac{1}{2}$ ins. square.

Fig. 1 may be 27 ins. high, the legs being $1\frac{1}{2}$ in. square at the top, tapering to $\frac{5}{8}$ in. square at the foot. The width over the legs at the top should be $11\frac{1}{2}$ ins., thus allowing the top to overhang $2\frac{1}{2}$ ins. at each side. The top rails may be $2\frac{1}{2}$ ins. wide at the ends (2 ins. wide at the centre) and $\frac{3}{4}$ in. thick. They are tenoned to legs. The legs will have short tenons to enter the top, and the top may be held either with glued blocks, or with screws passed in (by means of thumb slots) through the rails. The lower rails may finish 1 in. by $\frac{1}{2}$ in., being tenoned in the usual

*October and November, 1910; January, April, June and July, 1911. See also *WOODWORKER Handbook*. "Veneering, Marquetry and Inlay," price 7d., post free.

way. The height of these rails is important, what we recommend being 10 ins. from floor to underside of rail.

In the case of Fig. 2, the legs might be kept the same weight as in Fig. 1, or, if a slightly heavier table were wanted, they might be $1\frac{1}{2}$ in. square, at top, tapering to $\frac{3}{4}$ in. At the top the size over the legs may be 11 ins. square, and at the floor 14 ins. square. From floor to underside of lower shelf a height of 9 ins. may be allowed. The shelf itself will be 5-16 in. thick, its rails being 1 in. by $\frac{3}{4}$ in. These rails are tenoned to the legs, and the shelf screwed on from below. For the upper rails a width of 2 ins. will do. The height of this table may be 26 ins.

The chief difference between Fig. 1 and Fig. 3 is that the legs of the latter are placed at an angle. The total height here may well be 28 ins., and the legs will taper from $1\frac{1}{2}$ in. square to $\frac{5}{8}$ in. square. Over the legs at the top the width may be $11\frac{1}{2}$ ins. or 12 ins., and the width of upper rail 2 ins. The lower rails ($1\frac{1}{2}$ ins. by $\frac{1}{2}$ in.) are halved to each other at the centre and are tenoned to the legs. As the legs stand at an angle the tenons will enter the inner face (not an angle) of each leg. From floor to underside of rail a height of 9 ins. will give a good proportion.

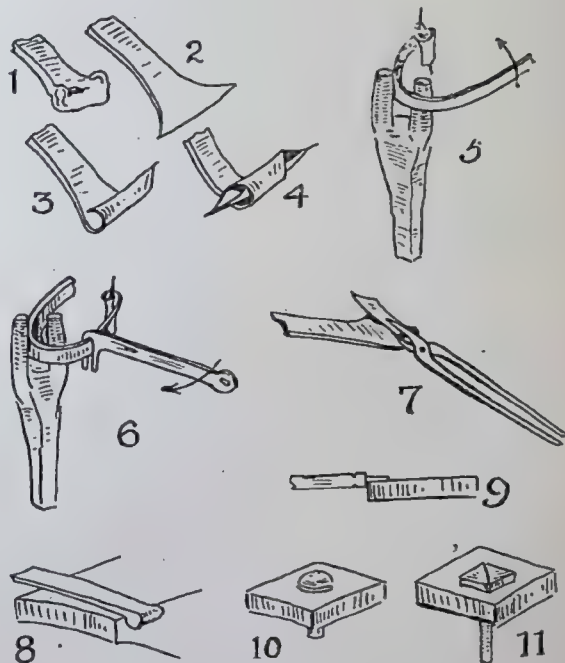
The top of table may in each case finish 9-16 in. or $\frac{5}{8}$ in. thick. If desired, narrow box or satin-wood lines might be run down the legs. Of course Figs. 1, 2, and 3 are merely suggestions, and there are many other types of occasional tables which could be followed in making practical use of the inlaid top.

WROUGHT GONG BRACKET.

OUR supplement this month includes a design for a gong bracket, suitable for any of our readers who may wish the opportunity of carrying out a little practical forge work. Reference may be made to the series of five articles on this subject in our issues of November and December, 1911, and January, February and March, 1912—especially February 1912, wherein practical hints are given on the formation of scrolls, several of which appear in the present design (see page 105).

The work should be carried out in $\frac{5}{8}$ in. by $\frac{1}{2}$ in. or $\frac{1}{2}$ in. by $\frac{1}{8}$ in. (or $\frac{3}{16}$ in.) Swedish iron, or mild steel. First trace the design with carbon paper on to a board chalked damp, and constantly use this as a guide in working the various curves. Commencing with the large double scroll portion, the main feature of the bracket (on which all the other parts are built), cut a piece of bar about 44 ins. long and flatten one end well out (in as few heats as possible) to fish-tail shape to form the boss of the upper scroll. On the full sized design the bosses of this large scroll are shown plain, and may if desired be left so; but readers who are accustomed to forge work will prefer to put a little more work on to these. It is well that the tip of the bar be upset to give

additional width to the boss. Now proceed to fold it round nearly close for several turns (see Figs. 1, 2, and 3). Fig. 4 gives the finished appearance of this part. Then, bit by bit, gradually form the complete scroll, testing frequently on the design board. Use a 10 oz. Warrington hammer. The scrolls may be bent to shape, using the hammer only, closing or opening as necessary over the beak of the anvil; or the scroll forks, scroll wrench and scroll tongs may be used in the manner indicated by Figs. 5, 6 and 7. Heat gently, and protect the finished "boss" or "eye" by intro-



DETAILS FOR WORKING WROUGHT IRON GONG STAND AS ON PAGE 105.

ducing the coal slice between it and the flame. Deal similarly with the lower end and thus complete this member.

Proceed now with the member which carries the gong and beater. The lower end of this will be more difficult to form owing to the sharp double bend, so do this part first. This bend could be simplified by making it as Fig. 13 (see page 108) instead of as Fig. 12 as shown on the design.

Upset the tip of the bar, and set down over the anvil to give material for the solid boss, Fig. 8. Then, with a very sharp thin hot cut, slit the end central for $2\frac{1}{2}$ ins. Open out and dress each prong. Next, judge the distance to the sharp corner and bend rather more acute than a right angle. The bending may be accomplished over the anvil, or in the vice. This practice is not wholly commendable, but if pieces of sheet iron be inserted as grips, and the hammer used discriminately, no cutting

in the internal angle should occur. Now adjust the compound curve of the scrolls to form the receptacle for the beater. Proceed, after measuring, to form the prongs carrying the chain of the gong, forming the boss or each narrow scroll as a reversed fish-tail.

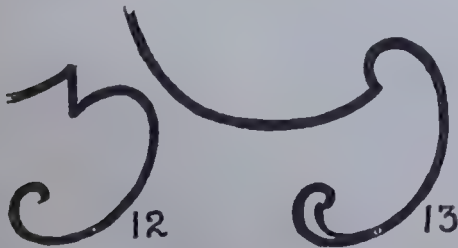
The small upper member requires but little description. Commence by flattening the bar edgewise to form the crest of the forward part, this being somewhat troublesome to do; complete the reversed scroll (slightly fish-tail) and the upper scroll with boss similar to the large member.

The back plate may be finished as shown in the design, or it may be split at the ends for a couple of inches and each prong flattened and bent into a short scroll; or, without slitting, it could be upset at each tip, well flattened and formed into a single scroll.

Fixing the Parts.

In work of this kind, an important item is the fixing of the various members one to another. It will be seen that seven bolts or rivets are needed to fix the parts, while six additional ones will be required to secure the iron and wood back plates. Small bolts with spherical heads and nuts may be bought, but it is just in these details of finish that the charm of true craftsmanship lies. Take a piece of $\frac{1}{4}$ in. round iron, and check to form a rivet (Fig. 9). Cut off and drive into a heading tool (a piece of thick iron with 5-32 in. cupped hole will do), and round up the head (Fig. 10). Remove, and further finish on the edge of the anvil. Make thirteen of these, arrange the parts, find the positions for the seven holes, and drill or punch them 5-32 in. full. Let each rivet protrude $\frac{1}{4}$ in., hammer up hot, then till quite flat, and a head will form itself which will be rounded over with the hammer. Have the work held solid while riveting. Countersink the holes in the back plate and fill well up flat, no opposite heads being necessary on these rivets.

Rivet the large member to the back plate first; then rivet the small upper member first to the plate, then to the large member. Lastly, rivet carrying member to the plate, and then to the large member.



BEATER HOOK AS SHOWN
ON DESIGN.

ALTERNATIVE
SUGGESTION FOR HOOK.

To secure the whole to the wood plate, form the rivet heads as nails; i.e., square them by a few blows from the hammer, and splay the tops (Fig. 11). Six of these driven carefully through

the back plate into the wood, and lightly clinched behind should make a very satisfactory job.

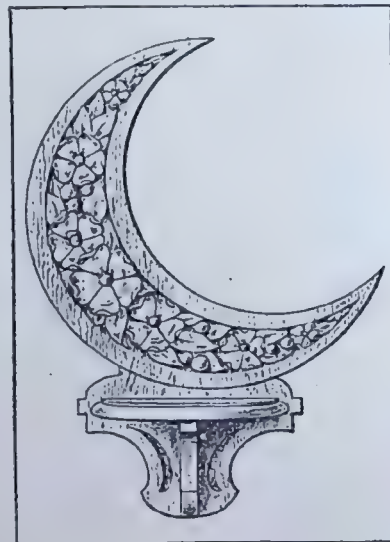
The forge work may be coated a dead black, the enameloid of the Liverpool Castings Company being a useful preparation for this class of work.

The wood back will look best in oak, fumed and wax polished, but dark walnut or mahogany would also do. It may be 16 ins. long, 2 ins. wide and $\frac{3}{8}$ in. thick, with pointed ends and chamfered edges.

CARVED BRACKET.

THE third design on our Supplement—a small occasional bracket—calls for little description.

For it a piece of wood (say dark walnut) 11 ins. by 8 ins. and $\frac{3}{8}$ in. thick (finished) will do, the shelf and support coming out of the waste part



SMALL CARVED WALL BRACKET.
SIZE 10 $\frac{1}{2}$ INS. BY 7 $\frac{1}{2}$ INS.

left by the dip of the crescent form. Care should be taken to have the edges accurately cut and nicely finished, as any error in the outline of the crescent will mar the effect. The relief is kept low, the highest points of the carving being intended to lie flush with the flat edge of the crescent. Of course a bolder result could be obtained by using $\frac{1}{2}$ in. wood, and allowing the carving to project about $\frac{1}{4}$ in. above the crescent edges. This, however, would necessitate cutting down the ground. The curves shown on the lower part are merely incisions.

The shelf is a semi-circle, 4 ins. wide and 2 ins. deep, with moulded edge. It and the shelf may be planed down to finish 5-16 in. thick.

Note.—THE WOODWORKER AND ART CRAFTSMAN design Supplements may be had free with the current number of the magazine for one month only. They are not given away with back numbers, but may be had separately, price sixpence each.

A DISPLAY CABINET.

A Graceful Article for Drawing Room or Parlour.

A CHINA or curio cabinet of particularly graceful form is shown here—one that presents no special difficulties, but which calls for great care in the preparation of the different parts to the sizes and thicknesses given, and for

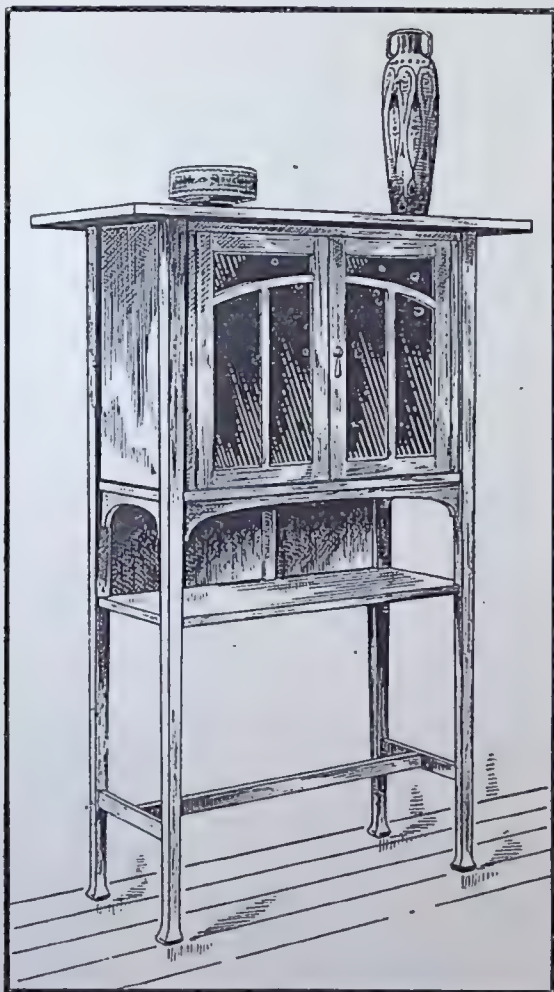


FIG. 1.—AN ELEGANT DISPLAY CABINET.
SIZE, 4 FEET 6 INS. HIGH.

neat and workmanlike fitting. The cabinet stands 4 ft. 6 in. in height. The carcass width over the legs at the top is 2 ft. 2 ins., the width over the actual top being 2 ft. 9 ins. There is a double-door cupboard, suitable for china, &c., which it may be desirable to keep under cover, and an arched recess below which will serve for the display of less delicate ornaments.

The style is plain, but not severe. There are

no mouldings, and the only shaped parts are the rails under the cupboard and the arched bars of the doors. The legs have shaped toes, but in this case the taper might if desired be taken to a square finish.

As an article in this style looks better when left with a dull finish, mahogany (which always seems to call for French polishing) is not the best wood to use. Of course a cabinet on these lines, made in mahogany and enriched with inlaid box or satinwood strings down the legs and around the door frame, would look well; but the style is not intended to be an imitation of Sheraton, and the writer's first choice would be Austrian oak, fumed (not too dark) and wax polished. A satisfactory alternative would be Italian walnut, finished by wax polishing only. Needless to say, sound wood of the best quality should be used.

Making the Cabinet.

As the top is $\frac{3}{4}$ in. thick, the legs (A, Figs. 2 and 3) will be 4 ft. $5\frac{1}{2}$ ins. long. In cutting, however, allowance must be made for a shouldered tenon to enter the top (see Fig. 8). The legs taper from $1\frac{1}{2}$ in. square at top to $\frac{7}{8}$ in. square (not more) at the ankle. The toes may spread out (as Fig. 7) to $1\frac{3}{4}$ in. square. It is very important that these legs are planed accurately to the measurements given, as a heavier leg would spoil the appearance. Each leg is tapered on all four faces; but if, as already suggested, the shaping of the ends was discarded, each leg might be kept vertical on the two outside faces, with only the inner faces tapered.

The front legs are dovetail-grooved on inner faces to take the top front rail (B), and also for two uprights (C) to which the doors are hung (see Figs. 8 and 9). The back legs are rebated to take the back (L). All four legs are grooved on the inner faces to take the sides (D), notched to take the cupboard bottom (E) and the lower shelf (F), grooved for the shaped rails (G and H), and mortised for the side rails (I). The section at Fig. 6 and the details at Figs. 8, 9, 10 and 11) will be of assistance in getting out the parts.

The top front rail (B) is introduced partly as a stiffener and partly to provide a space between the doors and the top. It is $\frac{3}{4}$ in. thick, and may be $1\frac{3}{4}$ in. wide. At each end it is dovetail-shouldered to enter the legs, as shown at Figs. 8, 9. The rail stands back $\frac{1}{8}$ in. from face of leg.

Owing to the slight taper of the legs, uprights (C) are provided for hingeing the doors. These may be $\frac{3}{4}$ in. or $\frac{7}{8}$ in. thick. At the top they are $\frac{3}{4}$ in. wide, but as the inner faces must be vertical they will be $\frac{3}{4}$ in. full wide at the cupboard bottom. They are housed to the legs the whole way down (see section, Fig. 6) and are stump-tenoned to the cupboard bottom. They stand in $\frac{1}{4}$ in. from face of leg, and are flush with doors.

The edges of the cupboard bottom (E) and the lower shelf (F) are intended to stand in $\frac{1}{8}$ in. from face of leg, and must be cut accordingly. The former is $\frac{3}{4}$ in. thick, and the latter $\frac{5}{8}$ in. Both are notched back at the corners to enter the legs (see

Fig. 11), and the cupboard bottom (E) has shallow mortises to receive the short tenons of the uprights (C). The lower shelf (F) is rebated to take the back. This shelf does not require either rail or bracket support, as it is not likely to be asked to bear any heavy weight. The method of notching shown at Fig. 11 will give a satisfactory hold.

The shaping of the rails G and H must be done with the greatest care, as much depends on getting a graceful sweep, especially with the front rail.

In case of any slip in working to the scale drawings, it may be mentioned that the height from floor to top of lower rail is 9 ins.; height from floor to top of lower shelf is 2 feet; and height from floor to upper face of cupboard bottom is 2 ft. 9½ ins.

The top of cabinet (K) is 2 ft. 9 ins. long, 14½ ins. wide, finishing ¾ in. thick. If difficulty is found in securing a sound piece of the required width two boards will have to be jointed. Special care

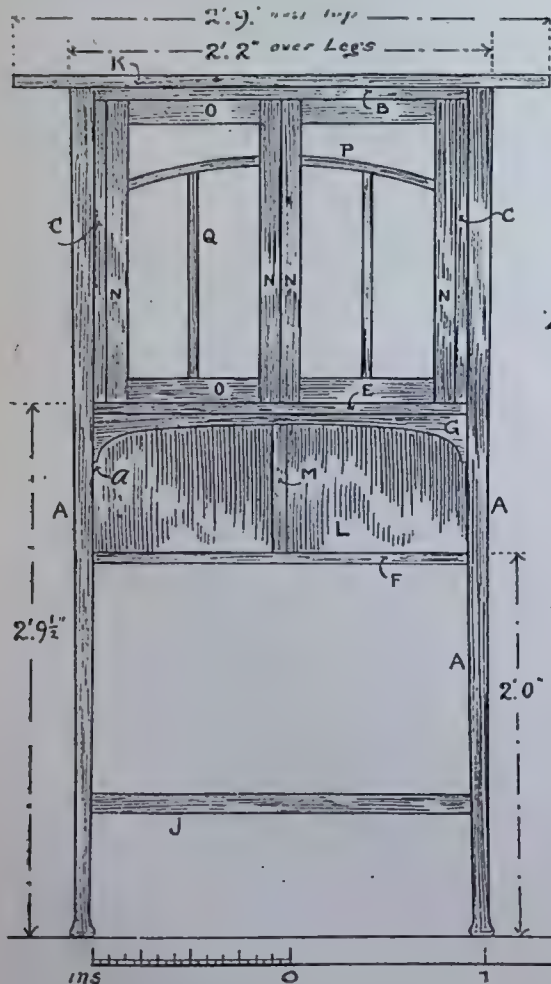


FIG. 2.—FRONT ELEVATION.

They are 3 ins. wide, and may finish ¾ in. thick. The curve at the ends must be fairly sharp, and at the middle the width must not exceed ¾ in. The little straight part marked *a* should be only ½ in., and although the curve of G must necessarily be a flat one, no part is absolutely straight. These rails are tenoned to enter the legs (see Fig. 10.) The lower cross rails (I) are 1½ in. deep by ¾ in. thick, and are tenoned to the legs. The centre rail (J) of the same section is tenoned to both cross rails.

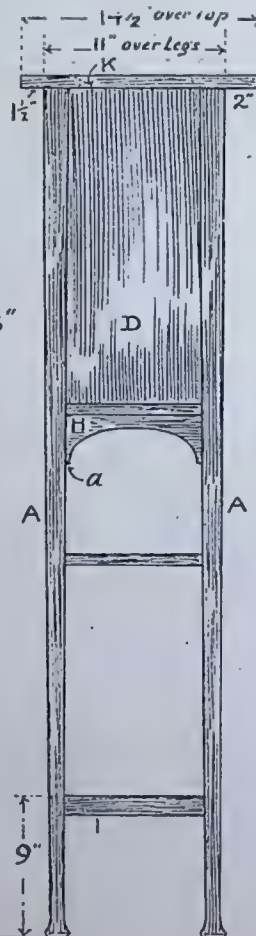


FIG. 3.—END VIEW.

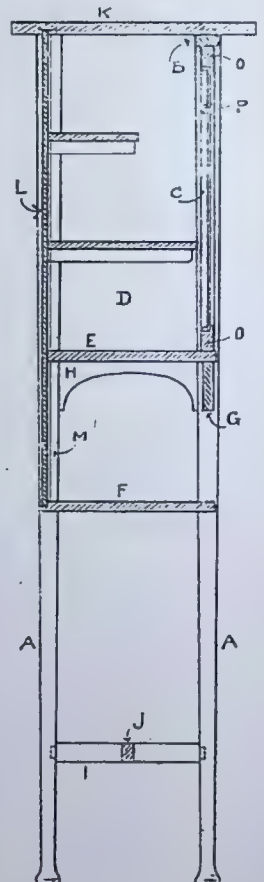


FIG. 4.—SECTION.

will have to be taken to see that the wood selected for the top is perfectly seasoned. At the sides the top overhangs 3½ ins., at the front 2 ins., and at the back (to clear the floor skirting) 1½ in.

The top has shallow mortises cut in the underside to receive the shouldered tenons of the legs. It is also grooved to take the sides and back. The front rail (B) might, if desired, be rebated to enter the top; but, instead of this, three screws may be passed in from underneath, these being sunk and the holes afterwards stopped. It is also open to

the worker to fix a rail similar to B at the back. This would afford additional strength, and the back would then be rebated to the rail instead of grooved into the top. As an alternative, the top may be

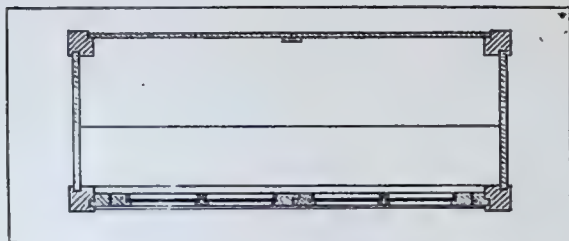


FIG. 5.—SECTIONAL PLAN, SHOWING TOP.

glue-blocked in position and strengthened by screws passed in from above. The screws would of course be sunk, the holes being very neatly plugged.

The curve of the bars P may be struck with a 30 in. radius, the highest point of curve coming 2 ins. below under edge of rail. The upright bars are centred. A section of the doors is given at Fig. 6. The rebates in stiles, rails and bars will be cut so that the glass is recessed 3-16 in.

Some workers may prefer to have a cabinet with solid doors, in which case nicely-figured panels, $\frac{1}{2}$ in. thick, may be taken, the bars P and Q being cut from 3-16 in. wood and planted on.

The cupboard may have one inside shelf $\frac{1}{2}$ in. thick; or it may have two shelves, a narrow one above and a wide one below, as indicated at Fig. 4. If the lower shelf is cut to the full width of the interior it will form a door stop. The doors may be hung with 1 $\frac{1}{4}$ in. in butt hinges. A flush bolt for one door and a bronze ball catch and plain drop handle for the other should be provided. A lock may be added, if desired.

The interior could be lined according to the worker's choice, but the cabinet will probably look better if left quite plain inside. This, how-

FIG. 6.—DETAIL SECTION OF LEG, DOOR, ETC.

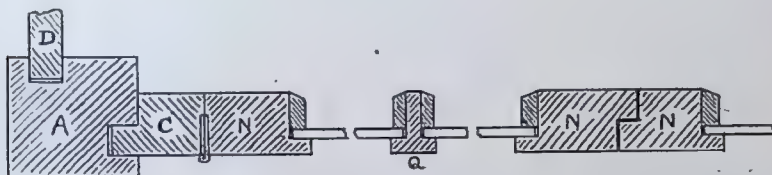


FIG. 10.—DETAIL OF SHAPED RAIL.

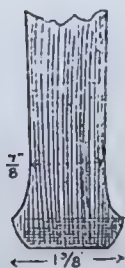
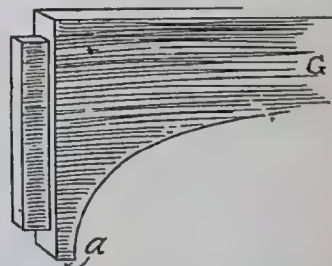


FIG. 7.—FOOT OF LEG.

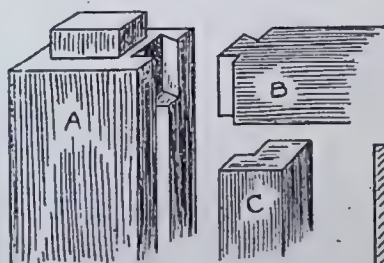


FIG. 8.—DETAIL OF LEG, RAIL AND UPRIGHT.

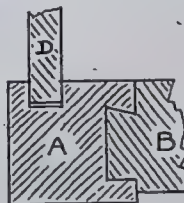


FIG. 9.—SECTION OF LEG, ETC.

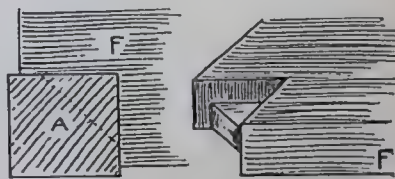


FIG. 11.—DETAIL OF SHELF, SHOWING METHOD OF NOTCHING.

The sides (D) may finish $\frac{3}{4}$ in. thick, and the back (L) 5-16 in. The back, which will be in two parts, should have a fillet (M, Fig. 2) 1 in. wide and $\frac{1}{2}$ in. thick planted on to hide the joint. A similar fillet, but of the required length, will be fixed inside the cupboard.

The doors come out at 1 ft. 7 ins. long by 10 $\frac{3}{4}$ ins. wide. They are framed up of stiles (N) 1 $\frac{1}{2}$ in. wide and rails (O) 1 $\frac{1}{2}$ in. wide. In preparing the centre rails, however, allowance should be made for a rebate (see Fig. 6), as there is no astragal mould. The framing may finish $\frac{3}{4}$ in. thick, the stiles being mortised for the rails in the usual way, and rebates cut to receive the glass. The curved and straight glazing bars (P. and Q) are $\frac{1}{2}$ in. wide, and finish plain and flat, flush with the stiles and rails.

ever, largely depends on the particular use to which it is to be put.

Tapestry Work in Sweden.

The Studio for March has an interesting article, with coloured and other illustrations, on modern tapestry work in Sweden. There are also reproductions of several etchings and dry-points after Albany E. Howarth, A.R.E.

Revival of Woodcarving.

Much attention is now being given to the subject of fine wood carving, and it looks as if the expert carver may find his work in greater favour during the next few years than it has been for some time.

SIMPLE FORMS OF WOOD CARVING.

BY HERBERT TURNER.

Simple V-Tool Work.

SEVERAL examples are given in this article of work that can be done entirely with one tool, the V-tool, which is probably the most useful of all the tools and at the same time the most difficult to use.

Fig. 1 gives a floral design—i.e., one based upon

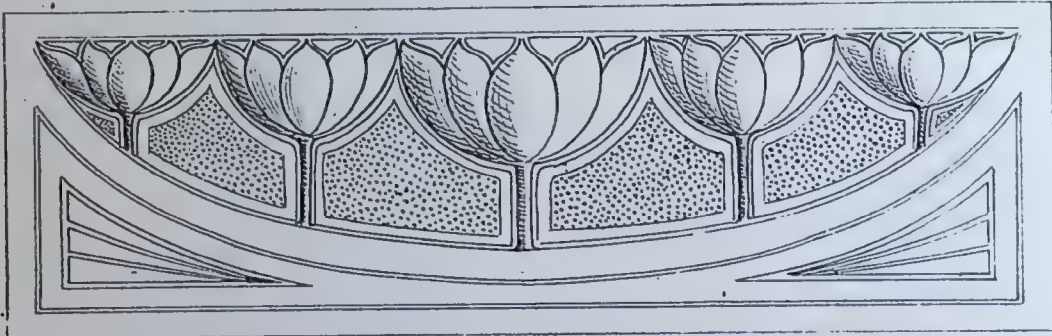


FIG. 1.—SIMPLE FLORAL DESIGN (CROCUS Motif) FOR V-TOOL TREATMENT.

natural foliage or natural plant form. The crocus supplies the *motif*, and its free lines allow it to be easily adapted to a design that lends itself quite naturally, without awkwardness and without straining, to V-tool treatment.

All the examples given here are in the nature of incised carving. The V-cut is done with the sides of the tool, making equal angles at each side, and with the point of the tool exactly upon the line. Double lines are indicated in some of the examples to show how the two lines are made by the tool.

In the last examples of V-tool work given only a simple incised cut was shown. In Fig. 1 the sides of the V-tool are used to model the work. In this case the petals are lowered towards the outside edges, and the stalks may be rounded. This is easily managed after a little practice. It may be said that a good sized V-tool should be used, say, 5-16 in. or $\frac{3}{4}$ in. The side of the V-tool is really a flat chisel, and can be used as one. Care has to be taken in finishing the cuts to prevent untidy work.

In Figs. 2 and 3 examples of borders are given. These are effective in a simple way, and are easily and naturally worked by the V-tool. They are flattened down upon one edge by the side of the V-tool, leaving a surface that is slightly rounded in section, with one high and one low edge.

These designs are useful for stiles and upright borders. In Fig. 4 we show a design that may be used for a stool top or panel; or, if the centre circle is cut out, for a photograph frame. In treating it thus it may be incised only, or modelled as in Figs. 1, 2 and 3. For stool tops a design like this is

admirable, because it must be accepted as an unalterable law that horizontal surfaces should not bear any quantity of cut up ornament, but should have the original surface retained. Whatever modelling is done here does not render the surface so cut up as to interfere with its usefulness. For a tray this type of design is well suited. Readers will themselves choose the wood and its sizes to suit their own requirements. The suggestions are such as can easily be applied and adapted to many objects which, although needing ornament, yet do not require much, and whatever is applied needs to be of a restrained type.

Wood Carving Notes.

ONE of the most marked and at the same time encouraging and hopeful features of present day creative art is the tendency towards naturalistic ideals. For many years, for centuries in fact, the civilised world has had its art dominated by the spirit of the renaissance. That this renaissance was necessary is without doubt; that it has helped in the development of that spirit of beauty that resides within the real self is also without question; and for this we owe the renaissance an almost infinite debt of gratitude.

But that it is an ideal that is capable of leading us to the highest mystery of being, that it is a movement charged with a living force that will lift us to that plane whereon alone can our eyes be opened to the greatest splendours of creative art, and whereon alone can our inner selves feel the inspiration that proceeds from the highest and purest source of all, that it certainly is not. It concerns itself with form, and form alone. Beautiful though form may be and is yet, when expressed as form for form's sake, when divorced from the life which is the real determining factor in the development of form (the only reason why form exists), then is it lifeless. Although of surpassing material beauty, then is it simply a collection of dry bones that no art of arrangement and planning, however ingenious and intricate, can make into that life which should beat through all form and make it pulsate with strength and vigour.

During the 19th century the renaissance gave rise to some surprising expressions of itself. In the domain of wood carving, a variety appeared that is sometimes known as 19th century renaissance. It was the stock-in-trade of wood carvers, professional and amateur alike, for fifty years and more. A

facile and cheaply effective style, it possessed elements and parts that appeared to be capable of easy and complete divorce from one another, or from the parent mass, and that could be used for all manner of shapes and sizes, corners and odd parts.

Carvers, without any knowledge of art principles, and worse still without that nice taste and judgment that may mark craftsmen that have not had a definite

Towards the end of the 19th century signs occurred that we may now look upon with certainty as foreshadowing a new development or the birth of a new spirit. There was a return to natural form, sometimes purely naturalistic, sometimes still clothed in the garb of the renaissance. But the desire for the natural was undoubtedly there, signifying that a force lay behind that was seeking expression and that if it could not find ready made forms that would suitably express its needs it would not hesitate to invent entirely new ones.

That this has happened is without doubt. Everywhere one finds that natural form is the form through which and by which the spirit of decorative art is finding expression to-day. The conventionalisation of this natural form proceeds no further than the due rearrangement that is necessary to fit the form to the

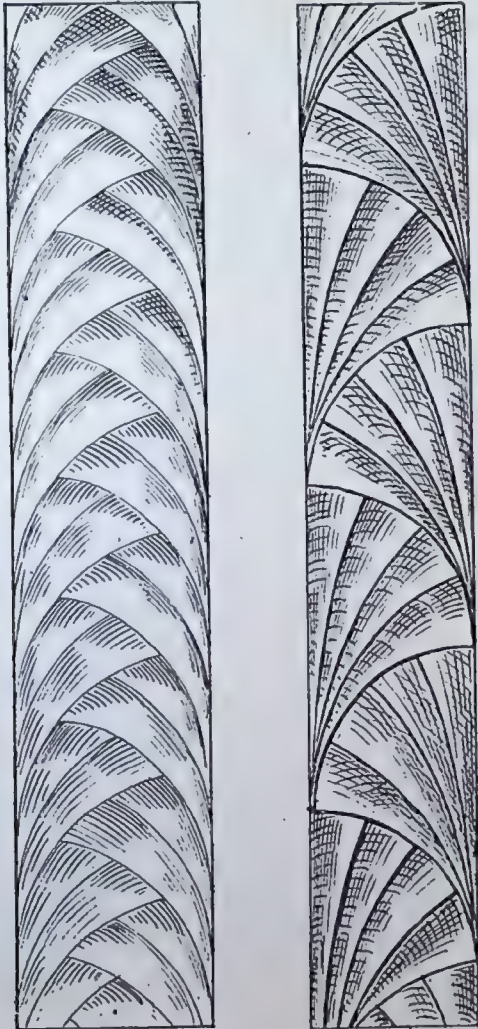


FIG. 2.—BORDER.

FIG. 3.—BORDER.

art training, used these divorced elements in the weirdest manner of disjointment, and a thoroughly unsatisfactory variety (one cannot even in courtesy say *style*) of wood carving came into being, and held tenaciously to life for many years. It must be looked upon rather as the final flicker of a spiritless style in a debased and senile old age than as any crude expression of an uneducated but virile and strong young life.

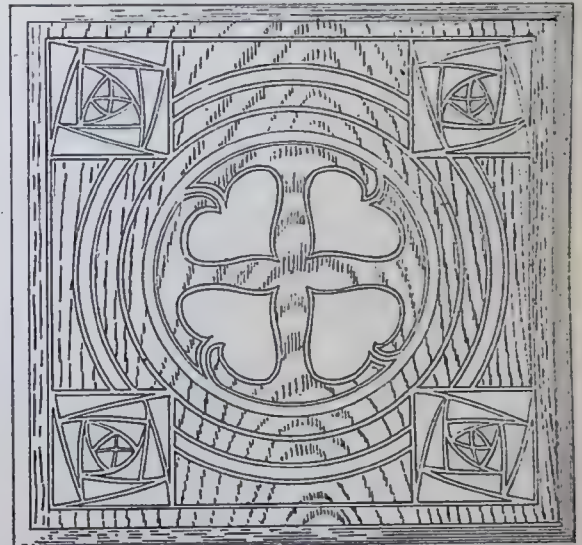


FIG. 4.—DESIGN FOR STOOL TOP OR TRAY.

space, and the treatment of the form is only altered to the minimum required to conform the law of materials. Gradually there is arising a new form that we may venture to hope will mark the beginning of the 20th century as the birth time of a new style of ornament, that will be stronger, more full of beauty, and above all that will be nearer to the mystery of being than any style we have yet known.

Tool Cabinets.

We are repeatedly asked for advice as to suitable cabinets and chests of tools for home use. To many woodworkers these undoubtedly come in exceedingly handy, and recently we had an opportunity of inspecting a range of such sets at the stores of Mr. J. Buck, 56, Holborn Viaduct, London, E.C. Mr. Buck's firm has a reputation of a century and a-half, and we can assure readers who have asked our advice that not only are the cabinets and chests convenient, but the tools are of the best quality. Mr. Buck supplies a catalogue for 4d.

A PORTABLE TOOL SHED OR WORKSHOP.

A SHED for tools and crops is needed on every allotment and in every garden, and as the tenants are such as often remove to pastures new it is desirable that these sheds should also be easily

As regards materials, these will consist entirely of what is technically called tongued and grooved flooring, and should be one inch thick. The quantity of this required for the shed shown will be—"3½ squares"—that is, three hundred and fifty square feet.

The shed is formed in five pieces: the front, the back, the two ends, and the roof. As the front is the most troublesome, we will deal with it first. When

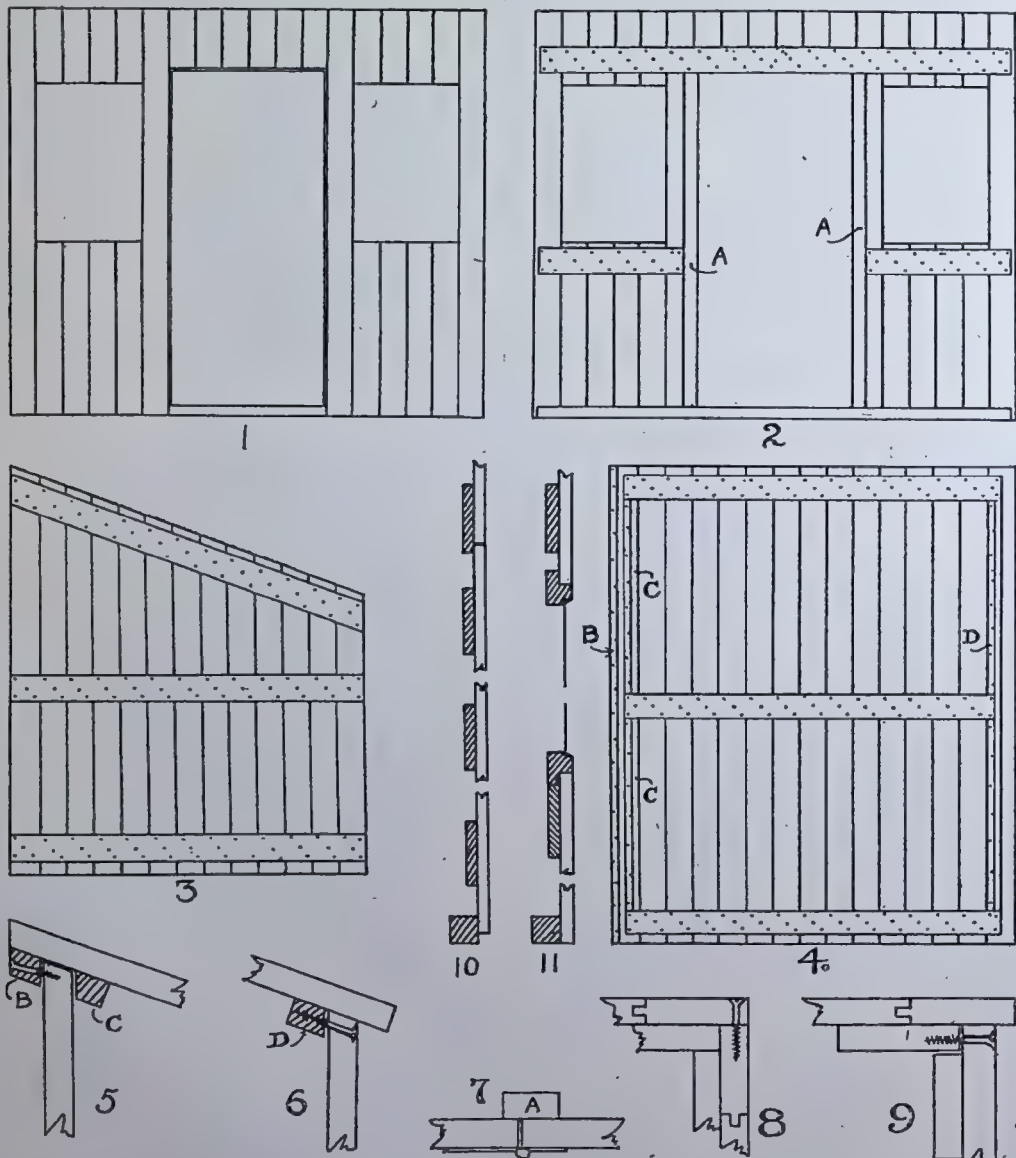


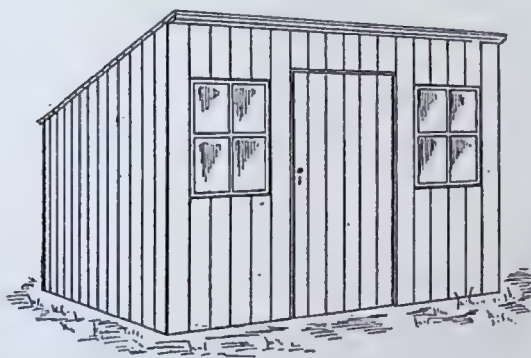
Fig. 1.—Front (outside). Fig. 2.—Front (inside). Fig. 3.—Side (inside). Fig. 4.—Roof (inside). Fig. 5.—Fixing Roof at Front. Fig. 6.—Fixing Roof at Back. Fig. 7.—Section of Door (Hinged Side). Fig. 8.—Fixing at Corners. Fig. 9.—Fixing Roof at Ends. Fig. 10.—Vertical Section, showing door. Fig. 11.—Section through Window.

removable. We have therefore designed the shed shown in the accompanying drawings expressly to meet such needs.

together, the front should appear as Fig. 1; the back (or rather the inside) of it will be as Fig. 2, and to make it like this we require four boards the same length as

the front of the shed is high (that is, 7 feet); eight other boards 3 feet long; and also eight more 15 ins. and six 12 ins. long. In addition to these we shall also want one ledge for the top, 8 feet long, and two shorter ones for the middle, 2 feet $4\frac{1}{2}$ ins. long.

Short ledges might also be used at either side of the door at the bottom; but a better plan is to use a piece of oak about 2 ins. square, and let it run through the door opening, thus holding all together and forming a sill to the doorway, as shown in Figs. 1 and 2. Fig. 2 shows plainly how the ledges are fixed on, and when these are done the strips A must be nailed or screwed on to form rebates for the door to shut into, the top ledge doing this at the top of the doorway.



THE FINISHED TOOL SHED.

The back of the shed will be formed by cutting off eighteen boards 4 feet 10 ins. long, and two boards for ledges. All are fixed together to match the front, no openings being required. The two ends will be done in the same way, making them as Fig. 3, but taking care to form them as a pair, right and left handed. Also place the ledges so that they do not come into contact with those on the front and back portions.

The ledges on the ends may run to the full extent of the boards, but those on the front and back must be kept the thickness of the boards away from the outside edges, to allow the sections to come together.

Roof, Door and Windows.

The roof will be made as Fig. 4. The boards should run from end to end of the shed, and must be long enough to overhang an inch at each end. The two outside ledges should be fixed so that they will just drop between the main boards of the ends, resting on the sloping ledges of the latter. The three ledges should be cut short enough to allow them to drop inside the front and back when placed in position, and the strips (B and C at the front and D at the back) should be screwed on while the roof is on the shed, thus insuring correctness. These strips will clip the upper boards of the front, as in Fig. 5, at the top, and will be as Fig. 6 at the back. They form a means of fixing the roof in position. At the ends of the shed, the fixing will be done by screwing from the outside into the ledges of the roof, as in Fig. 9.

The shed itself will be screwed together at the corners as in Fig. 8, about four screws at each front corner and three at the back corners being sufficient.

The door will be made by fixing together the required number of boards with ledges on the inside, and it will be hinged as in Fig. 7 so as to open out-

wards, the vertical section when in position being as Fig. 10. The fastening may be whatever is preferred; a hasp and padlock will be adequate.

The windows may be built up of a double thickness of the boarding; or they may be made of the regulation sash stuff, which may be bought cheaply. In either case they should be made an inch each way larger than the openings, so that they can be rebated all round, and will fit in as shown sectionally in Fig. 11, when four screws on the inside will fix them.

Finishing Touches.

The roof must be covered with some waterproof material. Ruberoid felt is as good as anything; it is not expensive, and will not be disturbed in taking the shed in pieces. All screws which will have to be withdrawn in unshipping the shed should be well greased before insertion. They will then come out easily, even if years have elapsed.

The shed should also be well painted, or given a coat of one of the new tar preparations. If the former is used it may be left safely for three years before renewing, but the latter should be renewed each year, always during or after a fairly long spell of dry weather.

We have given definite lengths and sizes, but it will be found economical in both time and material not to confine oneself to exact sizes, but to make the shed to a size each way, so that the widths of the boards come in without cutting.

Use yellow deal, not white, and purchase narrow boards. They will be cheaper in first cost, and will not show so much shrinkage.

FORTHCOMING EXHIBITIONS.

We shall be glad if Secretaries will kindly send us early intimation of forthcoming Arts and Crafts Exhibitions.

May 6 and 7.—County of York and East Riding of Yorkshire Arts and Crafts Exhibition, to be held at the Assembly Rooms, York. Secretaries, Mrs. Richard Lawson and Miss Saltmarsh, 44, Coney Street, York.

May 15 to 17.—Oxford Arts and Crafts Exhibition, to be held in the Town Hall, Oxford. Secretary, Mrs. Parker, Alverstone, Iffley Road, Oxford.

May 28 and 29.—Essex Handicrafts Association Exhibition, to be held at Winter Garden, Clacton-on-Sea. Joint Secretaries, Miss Edith Newman and Miss Hilda Ackers, Bank Chambers, Clacton-on-Sea.

Oct. 13 to 18.—Sunderland Arts and Crafts Association Exhibition, to be held at the Victoria Hall, Sunderland. Secretary, Mrs. Gordon Bell, St. Bede's, Sunderland.

In applying to Secretaries for schedules and particulars, a penny stamp should be enclosed for postage.

A Handy Guide.

"Hints for Home Decorators," published at sixpence by the Decorators' Supply Stores, 34, Trafalgar Square, Blackpool, is a useful little guide which home workers would do well to procure. It deals in a thoroughly practical manner with all branches of house decoration.

NURSERY FURNITURE.

I.—Toy Cupboard.

NOWADAYS, when greater attention is being paid to all that concerns children, it is becoming generally recognised that pleasant surroundings even in the nursery days contribute much to the successful upbringing of the young. It is of course possible to make nurseryland quite one of the best features of the home, a place to be shown to the visitor with pardonable pride, and the fact that youngsters are keenly appreciative of all that concerns their interests should weigh much with any parent when dealing with their special domain. It is therefore proposed in the course of a series of articles to offer several useful suggestions for the comfortable fitting up of the nursery.

The first item of furniture to be dealt with is a toy cupboard, and, as sketched, it will be seen that the whole thing is on simple straightforward lines, without unnecessary detail or difficulties of construction. The wood it is proposed to use is oak, plain and unpolished, although this may be oiled and wax-polished if preferred. Pitch

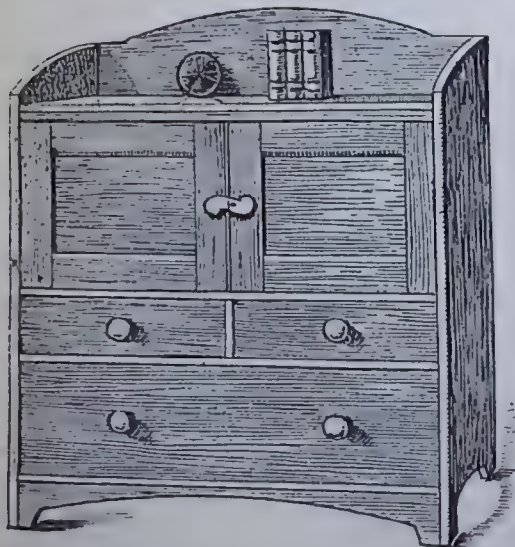


FIG. 1.—NURSERY TOY CUPBOARD.

pine has its attractions for some, and pine to be enamelled white for others; but the latter, whilst having a charming effect when new, will not long stand the racket of nursery usage.

Dimensions are put at 4 feet high to table top (or 4 ft. 8 ins. high over all) by 4 feet wide and 1 foot 6 ins. deep, back to front.

Referring to Fig. 2 it will be seen that the games cupboard is placed at a trifle over 2 feet high from floor, which should be convenient to the reach of the average small boy or girl. The interior may be fitted with a shelf to project,

say 10 ins. from back, so that a toy up to 18 ins. high may stand in front of it. The lower drawer would be serviceable for the placing of dolls and their varied outfit, also toys of slight construction which are safest kept apart, and the intermediate smaller drawers would provide accommodation for washable etceteras and things that have a tendency to roll.

The General Construction.

In getting out the stuff a start can be made with the sides (A, Fig. 3), for which two pieces, 4 feet 6 ins. long to finish 1 foot 6 ins. wide by $\frac{3}{4}$ in. thick, will be required. The upper 5 ins. is curved away to meet the back rail, and the lower 4 ins. will look well if arched with a spring of about 1 in. as indicated. The sides are also intended to be dovetail-grooved for the entry of upper and lower shelves and slotted for the front rail (C). The back edges of A may be rebated for the back, or this may be merely screwed on. For the top shelf (B) a piece 4 feet should be allowed, this length including a trifle for paring to fit. The width, which will involve glue-jointing, can finish the full 18 ins., so that the front edge may be slightly rounded off with glasspaper. The ends carry a dovetail to enter the sides (A), which, if carefully fitted, will make the whole thing neat and rigid. The top may, however, be tenoned to enter the sides or be merely grooved in, to be glue blocked and screwed through up from the underside. Sound and dry stuff only should be used for the blocks, and these should fit well into the angles; or a length of fillet 1 in. by 1 in., with the outer angle rounded off, may be glued under instead, with a neater finish.

For the front rail (C) a piece 4 feet by $1\frac{1}{2}$ ins. by $\frac{3}{4}$ ins. will serve to give something of a frieze effect, the lower edge being finished with a quirk and the ends each with a stub tenon to enter the sides. For the bottom (D) a piece 4 ft. by 1 ft. 6 in. by $\frac{3}{4}$ in. is allowed, to be dovetailed to carcass sides in the same way as the top for the sake of rigidity. Such a part can be of pine, faced up with a rail of oak 3 ins. wide; or the oak rail only can be slot-dovetailed into the sides or stub tenoned in with slips $1\frac{1}{2}$ in. wide by $\frac{3}{4}$ in. thick, to be tongued at one end to enter the inner edge of rail and have the back end nailed to the sides into which they are housed as drawer runners. The whole thing will then be held rigid and square by the back framing when this is screwed in position. It is always wise to fit a dustboard between these parts under the drawer.

Bottom Parts.

The lower apron piece (E) can be cut from a piece 4 ft. by 6 ins. by $\frac{3}{4}$ in. or $\frac{1}{2}$ in. net, and is shown as being neatly cut out, giving clearance for foot room and sweeping under. The part front and sides may of course be closed in with a plinth; but dust always drifts under, and as cleanliness in the nursery is a *sine qua non*, it is best to avoid dust traps as far as possible at the

start. As indicated, the apron (E) is rebated to enter the sides, correspondingly grooved, so that it can be pushed home from the floor end of sides and be screwed from behind with a glued block or two in the angle formed by E and D.

The cupboard bottom (F, Fig. 2) takes a piece 4 feet by 1 ft. 6 ins. by $\frac{3}{4}$ in., to be housed into sides, but stopped back $\frac{1}{2}$ in. from front as indicated for B and D to mask the joint. The shelf inside cupboard, 4 feet by 10 ins. by $\frac{3}{4}$ in., can rest upon fillets 10 ins. by $1\frac{1}{2}$ in. by $\frac{1}{2}$ in. screwed to carcass sides and to shelf. It should not be loose so that it can be tipped up, and if it is required to be easily removable the better plan would be to slide it into position between fillets

fit, the small drawers to be dovetailed together in the usual way. Four sides 1 ft. 6 ins. by 6 ins. by $\frac{3}{4}$ in. will be required for sides, and two backs 1 ft. 11 ins. by 6 ins. by $\frac{3}{4}$ in., all of sound and dry oak. The bottoms should be of $\frac{1}{2}$ in. stuff eased from pieces 1 ft. 11 ins. by 1 ft. and an inch or so had best be allowed to project beyond the back as a precaution against shrinkage. The larger drawer front can be got out from a piece 3 ft. 11 ins. by 12 ins. by $\frac{3}{4}$ in., the sides from two pieces 1 ft. 6 ins. by 12 ins. by $\frac{3}{4}$ in., and back 3 ft. 11 ins. by 12 ins. by $\frac{3}{4}$ in. The bottom being large should be strengthened by fitting a muntin 3 ins. wide to the front and back in the centre, so that the $\frac{3}{4}$ in. stuff can be grooved

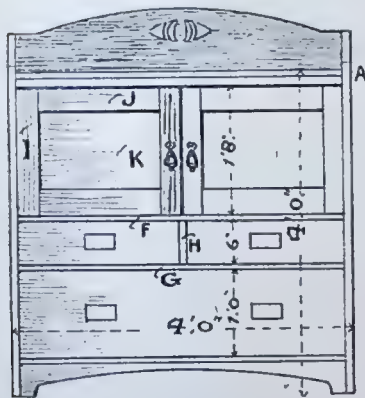


FIG. 2.—FRONT ELEVATION WITH PRINCIPAL SIZES.

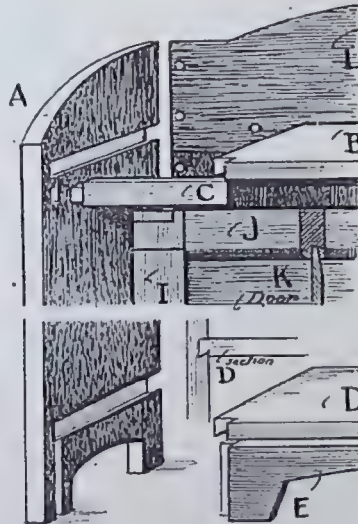


FIG. 3.—DETAILS OF CONSTRUCTION.

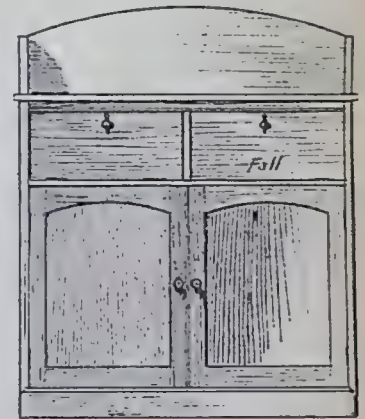


FIG. 4.—ALTERNATIVE CUPBOARD, WITH FALL-DOWN FLAPS.

screwed to the sides, taking care to fix them parallel. The drawer bearer (G), 4 feet by 3 ins. by $\frac{3}{4}$ in. net, can be tenoned into sides and will also be mortised for the entry of the partition between drawers as well as being grooved for dustboards. Two runners will require pieces 1 ft. 3 ins. by $1\frac{1}{2}$ in. by $\frac{3}{4}$ in. and one additional piece 1 ft. 3 ins. by 3 ins. by $\frac{3}{4}$ in. for the same purpose to be glued up to under edge of partition, and all three pieces stubbed into the bearer to give them a holding. The partition (H) is made up of a piece $7\frac{1}{2}$ ins. by 3 ins. by $\frac{3}{4}$ in., double tenoned top and bottom into F and G right through, the grain being vertical. Into the back edge of this a piece 1 ft. 3 ins. by 6 ins. by $\frac{3}{4}$ in. will be grooved to continue it to the back of carcass, the grain of the piece being horizontal.

The Drawers.

The drawers should only be commenced when the casing for them to enter is finished and has had a trial fit up so as to avoid the possibility of cutting the fronts too small. These should be of 1 inch stuff, to finish $\frac{1}{2}$ in. thick, as they take all the pull. Two pieces 1 ft. 11 ins. by 6 ins. will allow a trifle in length for easing to a

into it in two pieces. A glance at the lower drawer of an ordinary wardrobe or chest of drawers will make this clear.

Doors, Etc.

Coming now to the cupboard doors, four pieces will be necessary for the stiles, 1 ft. 8 ins. by 3 ins. by $\frac{3}{4}$ in., to be mortised each end for rails and rebated $\frac{3}{4}$ in. for panels. For the rails four pieces 2 feet by 3 ins. by $\frac{3}{4}$ in. can be allowed, to be cut with tenons each end to enter stiles, preferably right through and wedged. The rails are similarly rebated and are indicated as having the inner edges rounded away to meet the panel as a simple and clean effect. The meeting stiles should be rebated to lie flush over each other, and can be fastened by lock and key, or by an ordinary button shaped up and smoothed off as indicated (Fig. 1) out of a piece $3\frac{1}{2}$ ins. by $1\frac{1}{2}$ in. by $\frac{1}{2}$ in. and countersunk in centre for the entry of a brass screw as pivot. A short piece of $\frac{1}{2}$ inch dowel can be let into the cupboard bottom as a stop to prevent the doors pushing inwards, or the more usual method of fitting a small brass bolt inside the left hand door to shoot into top or bottom of cupboard can be adopted. The

door panels can be of $\frac{3}{4}$ in. or $\frac{1}{2}$ in. stuff, to be rebated in and beaded from the back. Two pieces 1 ft. 7 ins. by 15 ins. can be allowed for these.

The top rail of back (L) may be 4 ft. by 10 ins. by $\frac{1}{2}$ in., to be cut to the curve indicated, which will have about a 4 in. spring. This rail may be grooved along the under edge to receive lengths of 4 ins. wide by $\frac{1}{2}$ in. thick matching, which can be further held by screwing through from back into cupboard bottom (F) and bottom (D). A panel back, however, gives a much better finished effect, and for this a bottom rail 4 feet by 3 ins. by $\frac{1}{2}$ in., and three stiles 3 ft. 6 ins. by 3 ins. by $\frac{1}{2}$ in. should be got out together with two panels 3 ft. 6 ins. by 1 ft. 9 ins. by $\frac{1}{2}$ in. or $\frac{3}{8}$ in. This framing should be mortised and tenoned together and the panels bevelled away at the back to be grooved into framing, and the completed back screwed into position.

The drawers should run freely without being loose enough to wobble, and a rub of hard soap along the contact edges will generally ease any tendency to stick. Wood knob handles are shown, but 4 ins. brass or oxydised handles of plain but good pattern may be pressed into service. Note may also be taken of the small fret opening in the top back rail of Fig. 2, and it is advisable to round off all sharp outer edges.

With regard to the alternative suggestion for toy cupboard (Fig. 4), the construction is one the same lines as that described above. The doors have the head rails arched, and the full fronts above them will be supported by chains and screw eyes attached to the inner sides of carcase and partition and to the end edges of fall. The plinth is simply a length of $\frac{1}{2}$ in. stuff glue-blocked into position with the ends rounded off.

List of Parts.

In the following detailed list of parts all lengths are full to allow of paring to a fit, but all widths and thicknesses are net finished sizes.

		Long.	Wide.	Thick.
A	2 sides	4'6"	1'6"	x
B	1 top	4'6"	1'6"	x
C	1 front rail	4'6"	1'6"	x
D	1 bottom	4'6"	1'6"	x
E	1 apron piece	4'6"	1'6"	x
F	1 cupboard bottom	4'6"	1'6"	x
	1 shelf (if required)	4'6"	1'6"	x
	2 fillets	4'10"	1'6"	x
G	1 drawer bearer	4'3"	1'6"	x
	2 runners	1'3"	1'6"	x
	1 centre runner	1'3"	1'6"	x
	2 dust boards	1'9"	1'6"	x
H	1 partition	7'3"	3"	x
	1 partition continuation piece	1'3"	6"	x
Drawers—				
	2 drawer fronts	1'11"	6"	x
	4 sides	1'6"	6"	x
	2 backs	1'11"	6"	x
	2 bottoms	1'11"	1'6"	x
	1 drawer front	3'11"	1'	x
	2 sides	1'6"	1'	x
	1 back	5'11"	1'	x
	Bottom (2 pieces)	1'11"	1'6"	x
	1 muntin	1'6"	3"	x
Cupboard Door—				
I	4 stiles	1'8"	3"	x
J	4 rails	2'	3"	x
K	2 panels	1'7"	1'3"	x
Back—				
L	1 top rail	4'	10"	x
	1 bottom rail	4'	3"	x
	3 stiles	3'6"	3"	x
	2 panels	3'6"	1'9"	x

A PIPE STAND.

Suitable also for Flower Pedestal.

IT may be argued that the habitual smoker is rarely at a loss where to lay his pipe, and is in no need of a pipe stand. There can be little doubt, however, that, when sitting in the easy chair before the fire, it is a convenience to have a stand on which the pipe or book may be placed; and when it is obvious that the article illustrated here would serve equally well as a flower stand, or as a pedestal for some ornamental vase, its construction is worth a few notes.

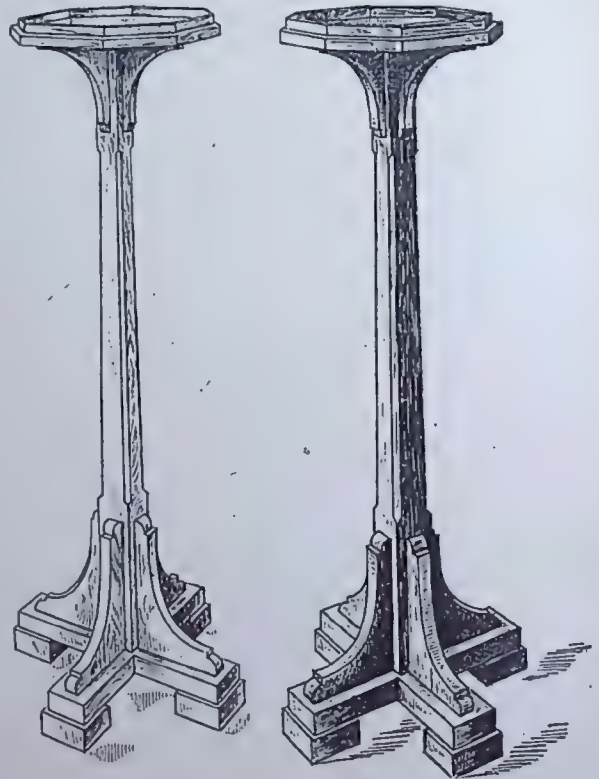


FIG. 1.—A USEFUL PIPE STAND, 30 INCHES HIGH. FIG. 1A.—ALTERNATIVE HEAVIER STAND FOR FLOWER POT OR VASE.

The height from floor to table top is 2 ft. 5 1/2 ins., practically the height of an ordinary dining or writing table. There is a rail $\frac{3}{4}$ in. deep around the top, but this does not appreciably increase the height. The post is 2 ft. 3 1/2 ins. long. At the foot it is 1 1/2 in. square, tapering to 1 in. square at the top. The four edges are chamfered as indicated, the chamfers being stopped 6 1/2 ins. from the foot and 5 ins. from the top. The tapering and chamfering must both be carried out with care.

The crossed feet are each 9 1/2 ins. long 1 1/2 in. wide, and 1 in. thick. These are prepared with halved joints (as Fig. 4) and are glued together.

The square toes are $2\frac{1}{4}$ ins. by $2\frac{1}{4}$ ins. and 1 in. thick. (They might with advantage be made $1\frac{1}{2}$ in. thick.) They are glued to the underside of crossed feet, with a projection of $\frac{1}{4}$ in. at front and sides as shown in the sketches. Each toe may be further secured by passing in two long thin screws from below. As the lower brackets will also be screwed to the cross feet the toes should not be fixed on till the brackets are fitted.

Those lower brackets are 6 ins. long, $3\frac{3}{4}$ ins. wide, and should finish $\frac{7}{8}$ in. thick. As the post has a gentle taper, the angle of the bracket needs to be

screw may also be passed through the halved joint of the crossed feet into the post. During this part of the work every precaution must be taken to see that the post is kept absolutely vertical in relation to the feet.

The Top Parts.

The upper brackets, which come immediately below the top, are 4 ins. long, 3 ins. wide, and may finish $\frac{5}{8}$ in. or $\frac{3}{4}$ in. thick. Here the angle will be just a shade less than a right angle. The brackets are dowelled and glued to the post, and are also fitted with dowels to enter the underside of top.

The top (Fig. 3), finishing $\frac{1}{2}$ in. thick, is octagonal in form and measures $8\frac{1}{2}$ ins. or 9 ins. across. Its underside is bored for short dowels to secure it to post and four brackets. An alternative method is to have an octagonal sub-top, about $7\frac{1}{2}$ ins. across, and 5-16 in. thick. This sub-top would be screwed to the post and brackets, and then the real top (only $\frac{3}{8}$ in. thick in this case) screwed to the sub-top from below. If, however, the worker is well up in glueing he can adopt the method shown.

The rail round the top is cut from a strip $\frac{3}{4}$ in. wide to finish 5-16 in. or $\frac{3}{8}$ in. thick. It should stand in about 3-16 in. from the edge of top, and the corners must be neatly mitred. It will also be advisable to veneer-key them. The rail is glued down, and a fine screw may afterwards be passed into each of the eight sections from below. The screws should be sunk, the holes being neatly stopped. The top edge of rail should be gently rounded.

Almost any wood may be used for the stand. Oak, fumed and waxed, will look well, but dark walnut is also suitable. Bass or canary, afterwards stained, might be taken, and French polished mahogany will look well. Readers who are accustomed to cabinet work, could secure a good effect by using mahogany and running in a few box or satinwood lines on the post, brackets and top.

Alternative Heavier Stand.

At Fig. 1A is shown a slightly heavier stand, suitable for holding a flower pot or ornamental vase. In this case the post might be $1\frac{1}{4}$ in. square, tapering to $1\frac{1}{4}$ in. at the top. The crossed feet might be $2\frac{1}{2}$ ins. wide and $1\frac{1}{4}$ in. thick, and the toes $2\frac{1}{4}$ ins. square by $\frac{1}{2}$ in. thick. The lower and upper brackets on the octagonal top might be kept $\frac{1}{2}$ in. thicker than indicated above. The post could, if desired, be made longer—say, from 2 ft. 9 ins. to 3 ft. 3 ins.

Uses of Old Files.

Old files can be used for many purposes about a factory, by grinding only, such as for cold punches from round files; scratchers, small groovers, sandpaper cutters, &c., from three-cornered files; cold chisels, screwdriver, wood chisels, &c., from flat ones. The temper can be drawn by the grinding after one gets used to it. Of course these are only makeshifts, but they come in handy at times.

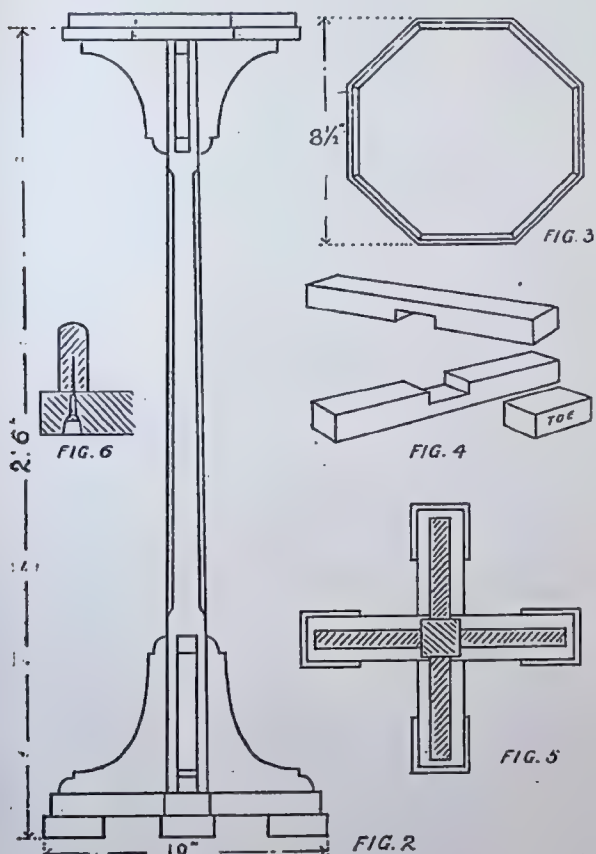


FIG. 2.—ELEVATION OF STAND. FIG. 3.—PLAN OF TOP.
FIG. 4.—CROSSED LEGS. FIG. 5.—PLAN OF LEGS AND
TOES. FIG. 6.—TOP AND TOP RAIL.

just slightly more than a right angle. Of course, the post might be kept straight up to the point where the chamfer begins, and the taper then start—in which case the brackets would be cut exactly to a right angle. Whichever plan is preferred it must be seen that the brackets will fit closely against both post and feet, and that no daylight is visible at the angle. The shaping of the brackets will give no trouble, but all four must be uniform. The brackets are dowelled and glued to the post; they are glued to the feet, with a screw passed into each from below. A long

SIMPLE JEWELLERY.

Three Little Brooches.

THERE is a continuous demand at all jewelers and art exhibitions for small brooches.

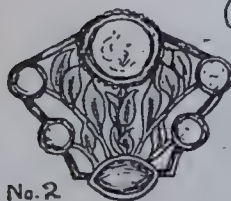
Everybody wants to have several of these useful fasteners, as there are so many purposes to which they can be applied. No one can wear more than one pendant at a time, but a lady might easily have one brooch to fasten her veil, another in her collar, and a third in her tie.

Designs are here shown for three which are easily made, and which though not indicating any startlingly novel features have a certain amount of originality which lends them distinction.

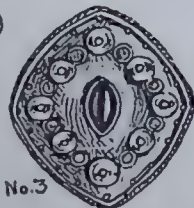
First Design.

The first is very easily made, and may be attempted with a certainty of complete success by any beginner who has mastered the art of soldering. Required: Some thin flat silver wire, some flat wire of almost square section, some thin sheet silver for the setting, some round wire for the chain links, a brooch pin, hinge and catch, a square chrysoprase or other stone, and a small river pearl fitted with a loop for hanging, or bored ready for a wire.

No. 1.



No. 2.



No. 3.

THREE SMALL BROOCHES.

Make a little of the silver wire into beads by cutting off a sufficient number of bits of equal length and melting them one at a time on the charcoal block. Then bend the thin flat wire into three lobed knots as shown. Solder the ends and the points where the wires cross. Solder the beads into the angles. Paint these joints with whitening to prevent them coming unsoldered. Make a collet setting for the stone, filing the edges extremely thin and filing out triangular nicks at the corners which otherwise would not lie flat. Paint the setting *inside* with whitening. Cut a short length of the strong rectangular wire and solder a large bead at each end of it. Arrange the wire knots and the setting in position and solder, taking particular care to replace them if they get moved out of position by the boiling of the solder. When all is firm make a thick paste of whitening, and press the setting into it, so that the base of the wire support alone is above the surface (observing carefully that not a scrap of

the whitening gets where you want to solder) Let this dry thoroughly and then place the hinge and catch in position, and solder them on. It is quite possible to manage this by balancing the brooch on the setting, but on the whole the plan of fixing it in whitening is the last trouble in the end.

The little chain and pearl drop is an optional addition. The links are curled up out of round, wire and soldered at the joint before putting on the hinges. Boil the brooch in sulphuric pickle and oxidise slightly before setting the stones.

Second Design.

The second brooch is a little more troublesome, as the silver leaves call for some dexterity in the making. Cut diamond shapes of sheet silver, and on to each one solder a short length of wire that has been filed to a point at one end. Snip off the acute angles of each at the sides, and hammer each into an agreeable shape. Make them of two or three sizes as shown. Bend up some strong flat wire edgeways to the shape of the outline. Solder the ends and surround the whole with twisted wire which has been gently hammered to flatten it, and open it out. Make the settings and solder the main branches in position (the direction to protect previous joints with whitening will not be repeated but must be understood.) Tie the leaves in position with the very finest binding wire, arranging the stalks to appear as if growing naturally from the larger stems. The settings will not require tying. Probably all the joints will not be strong at the first trial, so it is well to test this before untying the binding wire, and if necessary the soldering must be repeated. Subsequent operations are as for brooch number one.

Third Design.

The inspiration of the last design comes from an old Norwegian specimen. It is quite easy to make and very effective. Bend up the shape of the outline in thin flat wire used edgeways, join the ends and solder it to a piece of thin sheet silver, cut away all the superfluous metal outside this wire and trim neatly with files. Tie a fine twisted wire round and solder. Slightly dome up the centre of the plaque and solder the netting for an oval carbuncle in the middle. The wreath round consists of little cup-shaped flowers and tiny rings alternately. To make the flowers strike some raised rounds in very thin silver, with a ball beaded punch. Then with a ring cutting punch, just a shade larger, cut them out on a level bed. In the centre of each solder a suitably sized grain. To make the rings take a coarse knitting needle and wind thin silver wire round it.

Put the needle and wire in the vice and with a fine fret saw make a cut down the centre. Take them out of the vice and the wire will slip off in a series of tiny rings, slightly open where cut, but easily closed by pressure. Grains are soldered at intervals just inside the wire rim. Give this brooch an exceedingly dark finish—almost black—and then rub off, so that the edges of the wire, the grains and the cups and rings sparkle brilliantly. The most effective stone is a garnet backed with gold foil.

THE QUESTION BOX.

Illustrated Replies to Readers' Queries.

As one of the main objects of *THE WOODWORKER AND ART CRAFTSMAN* is to help its readers, questions of general interest dealing with any branch of handicraft will be answered on this page.

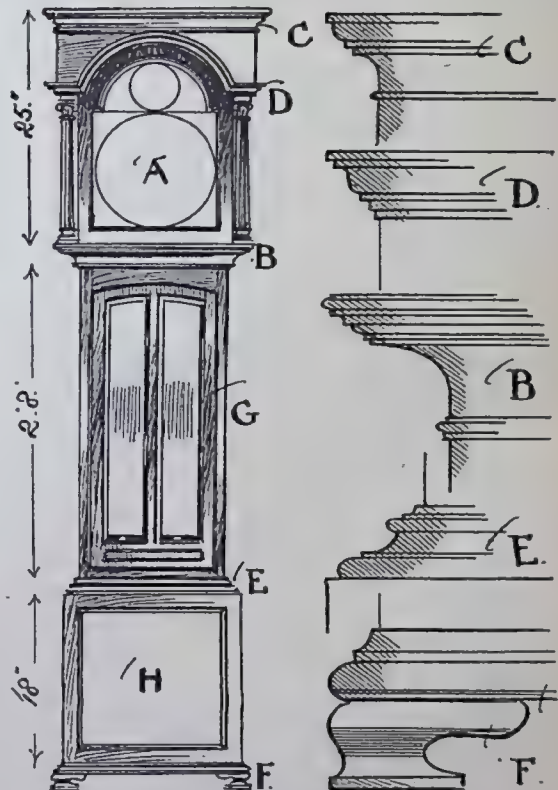
As it is impossible to reply fully in these columns to all queries received, questions on subjects within the scope of this Magazine are replied to by post under the following conditions:—(1) Questions dealing with distinct subjects should be written on different slips, on one side of the paper only, and the sender's name should be written on the back of each. (2) Questions should be accompanied, wherever possible, with fully dimensioned sketches, and correspondents are recommended to keep a copy of their Questions for reference. (3) A stamped addressed envelope (not post-card) should be enclosed. (4) Questions will be answered as early as possible after receipt, but when sketches have to be prepared, or when research has to be made, a short interval must elapse before the Reply can be forwarded. The insertion of Replies in this column cannot be guaranteed, but all Replies of general interest will be given when space permits. All Questions should be addressed to The Editor, *THE WOODWORKER AND ART CRAFTSMAN*, Sardinia House, Kingsway, London, W.C.

Grandfather Clock.

[375] P. F. S. (Maesteg) writes: "I [am] desirous of making a grandfather clock case in oak and should feel greatly obliged if you could help me as regards dimensions and a few hints on construction. I don't want anything very elaborate, something similar to the one appearing in the issue of May, 1912, only should be glad if you will give me the measurements of different parts. I should like to have two narrow bevel glass panels in door front. Some sketches in an early issue of *THE WOODWORKER* would be very acceptable if you think same would be of general interest. I wish to add that *THE WOODWORKER* has been a great help to me. I have made a bedroom suite in oak, including bedstead, wardrobe, chest of drawers with linenpress on top, washstand and dressing chest; also an oak sideboard, oak hall stand, etc.—all through help received by articles in *THE WOODWORKER*."

REPLY.—The sketch of grandfather clock case offered here should work out serviceably for your purpose and the enlarged moulds and dimensions given will make the full size set out a simple matter. The case containing the dial and movement consists of sides, front and cornice only, so that it may be pushed home from the front to slide along the moulding (B). The back of the case is fitted independently, and the back edges of case sides should clip home each side of back. The movement you propose to mount has, we presume, the usual 12 inch dial (A). The case containing this may finish 25 inches high, as shown, by 20 inches wide. The door is 21 inches high by 15 inches wide, of $\frac{3}{4}$ inch stuff, stiles and rails of frame being $1\frac{1}{2}$ inches wide. This door shuts on to an inner frame of $\frac{1}{4}$ inch stuff of same size, glue blocked and screwed into position. The sides of the case can finish $8\frac{1}{2}$ inches and are generally cut out in centre and glazed. The cornice (C) can have a projection of $1\frac{1}{2}$ inches and is $1\frac{1}{2}$ inches high. The clock movement rests upon ledges fitted about $4\frac{1}{2}$ inches high, and may be so fixed that they serve as guides to grip the case when in position. The mould at B has a projection of about $2\frac{1}{2}$ inches, to finish 21 inches wide by $2\frac{1}{2}$ inches high. The mould at E is $1\frac{1}{4}$ inches high, with a $1\frac{1}{4}$ inch projection, and the base mould (F) will look neat if allowed $1\frac{1}{2}$ inches high on the $\frac{1}{2}$ inch projection. The shaped toes, mitred at angles and glue-blocked in position, finish 2 inches high by 4 inches

with a width over all of $20\frac{1}{2}$ inches. The body of clock (G) can finish 16 inches wide at front, and at sides 7 inches. It consists of a framing of 2 inches by $\frac{3}{4}$ inch stiles and 4 inches by $\frac{3}{4}$ inch upper and lower rails, mortised and tenoned together or dowelled as preferred. The door as seen should overlap this framing a matter of $\frac{1}{4}$ inch or so; it is usually of $\frac{1}{4}$ inch thickness with moulded edges, and is backed by a framing of common wood $\frac{1}{4}$ inch thick, made to fit compactly within the framing. A couple of bevelled plate glass panels are indicated as desired. The back may be



DETAILS OF GRANDFATHER CLOCK CASE (No. 375.)

of $\frac{3}{4}$ inch stuff rebated in, and the case itself can be glued up and carefully blocked from within. The base (H) would finish about $19\frac{1}{2}$ inches wide on face by $8\frac{1}{2}$ inches at sides, the height of the case only being 18 inches. If preferred the door can be made to open to the full width of body so as to obtain wider glass panels, but the effect will not be quite as good as shown. An alternative design which might be useful to you appeared in *THE WOODWORKER* of October, 1911, page 285.

Wooden Phonograph Trumpet.

[376] G. L. (Liverpool) asks for particulars regarding the making of a wood phonograph trumpet, round in section and made of thin mahogany.

REPLY.—The trumpet would require to be built up on a mould. A suitable mould could be made by filling an old trumpet of required size with plaster and laying the mahogany upon this. The trumpet

could be made in jointed sections, each section being wedge-shaped and cut proportionately to the diameter and swell of the bell, a matter of careful sizing and precision in cutting, and, in fact, a tricky job. Or, alternatively, you could build up the trumpet with mahogany knife cut veneer in strips to overlap. The strip should be glued and laid quickly, and a warm iron used over the wood to press out the superfluous glue should it (as it probably will) chill too quickly for the worker. The final lap can be finished with a wide bevel on the edge and be papered down to a finishing smoothness. The glueing can be bound with wide tape to cramp it till thoroughly set.

Child's Dressing Table Top.

[377] H. R. (Knocke-sur-Mer, Belgium) writes:—"I should be much obliged if you would send me a design with full working plan and instructions for making top part of a small toilet table (for a child) which I am making. Sizes are enclosed. I want the top part to have a panel above top of table with a shelf over it running whole length and looking-glass above. The whole should be of quite simple design and easily made, as I am not a very expert carpenter. I made out a drawing, but it looks rather as if the height would be out of proportion to length of table. The table itself has a drawer and a cupboard below it. I am making it of pitch pine."

REPLY.—We offer a sketch on simple lines for the child's dressing table top you wish to make. As you say, the top is likely to look disproportionate to the base, but this in a measure will be due to the altered dimensions of the base as compared with the full size

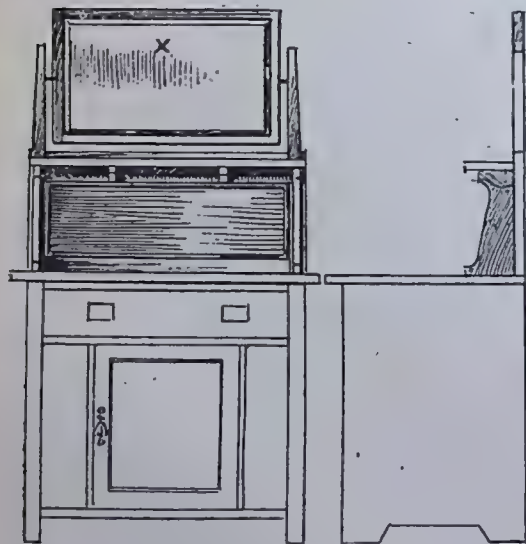


FIG. 1.—CHILD'S DRESSING TABLE TOP (No. 377.)

article. In any case we think the governing factor for height of back should be the height of the user's eye (X). A wood panel and shelf are shown as required, but the former can be reduced if a larger mirror is preferred than Fig. 1, although that shown should be ample for a full head and shoulder view, if sloped forward a trifle from the bottom. As sketched sight size is 12 ins. by 21 ins., bevelled 1 in., framed in 1½ in. by ¾ in. stiles and rails. Patent movements for swinging can be obtained from Messrs. Oakden's,

Broadway, London Fields, London, N.E. The shelf is fixed at 11 ins. high from table top, supported by two long and two short brackets. A sketch of parts indicating a method of putting together (Fig. 2) may assist in getting out the stuff. The mirror frame is mortised and tenoned together with a ¼ in. rebate for the glass to enter, and be fixed with small wedges as in section, with a ¼ in. back screwed on.

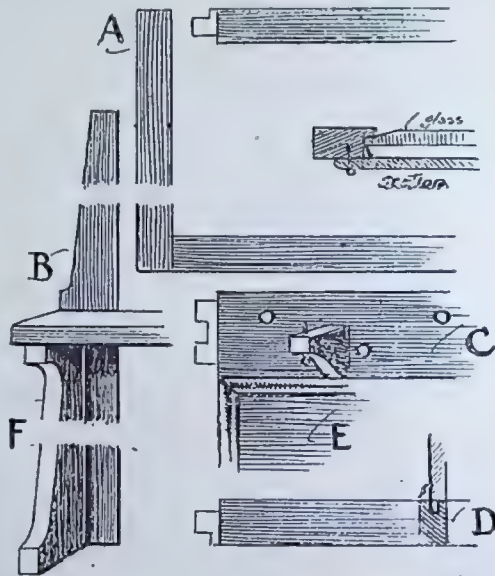


FIG. 2.—DETAILS (No. 377.)

It is best to fix in this way, but the wedges can be omitted and a back of ¼ in. stuff be beaded in after placing a layer of paper over the silvering to protect it from scratching. The uprights (B) are just short of 24 inches long by 2 ins. to 2½ ins. wide, mortised or holed for tenons on back rails (C and D). Rail C is 3 ins. wide by 2 ft. 3½ ins., including joints, and rail D 1½ in. wide out of 1 in. stuff to finish ¾ in. thick net. The panel (E) may be of ½ in. or ¾ in. stuff grooved into rails and uprights, as indicated in section, with or without a three member mould dropped in from the front to be mitred at angles. Or the mould may fit along the edges of rails to butt flush against the uprights. Alternately the panel can be rebated into the framing and be beaded in from the back; or, in a simpler way, the facing edges of the rails may finish with a deep bevel and have a panel of ¼ in. stuff screwed on from behind, the inner edges of uprights being left square. The shelf, 4 ins. to 5 ins. wide, can be screwed into position from behind (as also the supporting brackets), the end ones (F) finishing 10½ ins. by 4½ ins., and the smaller brackets between 3 ins. by 1½ ins. high, shaped as shown, these parts showing ¾ in. thick. For the rest we think the sketches explain themselves, and we trust they will assist you to get over your difficulty

Moulding Planes.

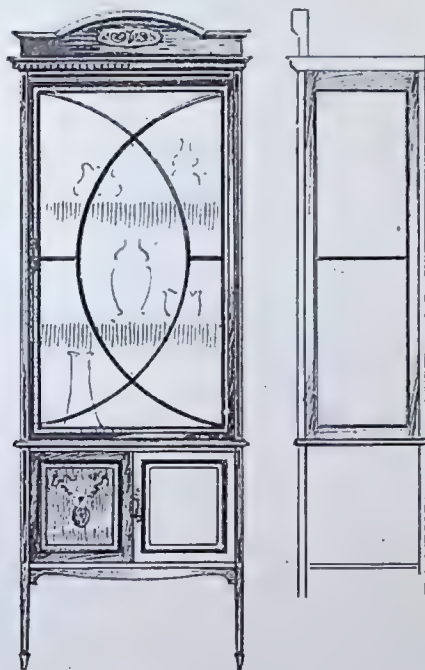
[378] E. K. (Cranford) writes:—"Would you kindly let me know what kind and size moulding planes would I require for cupboard bookcase, Fig. 1, in THE WOODWORKER, of December last (Vol. XVI., page 303)?"

REPLY.—You will require fillister, rebate, hollow,

round and ogee planes for the moulds referred to. There is a scale with the enlarged details on page 306, which will enable you to tell the sizes required, allowing generally for the plane to be a sixteenth less than the size of mould to be worked. Stock moulds such as those on the doors and base can be worked by single planes cutting the full section. A $\frac{1}{4}$ inch scratch will of course give you the flutes on pilasters.

China and Music Cabinet.

[379] A. C. (Wanstead) sends a rough sketch of combined china and music cabinet he is about to make, and asks for particulars regarding sizes, etc.



CHINA AND MUSIC CABINET (No. 379.)

REPLY.—From the rough sketch enclosed with your letter we note that the china and music cabinet is to work out to 6 feet high over all by 2 feet wide. Depth back to front should be a full 2 inches in excess of music size, measuring over ends outside. Pediment can be dowelled into position and can finish $4\frac{1}{2}$ ins. high with a 3 member mould as capping, and satinwood inlaid oval as ground for the central inlay. Cornice may finish $1\frac{1}{2}$ inch high and would be improved with a dentilled member, inlaid or cut. Uprights, $1\frac{1}{4}$ in. by $1\frac{1}{4}$ in. can be fitted to run right through, or the china cupboard portion can be separately made with the door hinged on to ends. Door stiles and rails can finish $1\frac{1}{4}$ by $\frac{3}{4}$ in. net., carefully mortised and tenoned together and pinned. Sides show $1\frac{1}{2}$ inch stiles and bottom rail, and $2\frac{1}{2}$ inch top rail, so that the line of the door is continued round. Back can be panelled or flush boarded, and covered with rep in some artistic tint. Shelves may be of $\frac{1}{2}$ in. mahogany, but will look best if of plate glass with ground front edges. The lower cupboards show the doors 12 inches high, with $1\frac{1}{4}$ in. by $\frac{3}{4}$ in. stiles and rails, and $\frac{3}{4}$ in. panels. Inlaid banding is shown round upper door and also round panels of smaller doors.

Legs can taper to $\frac{7}{8}$ in., with or without toes, as shown. An alternative suggestion to the single door would be to fix a 6 inch wide glass panel each side, and an 18 ins. wide door between, making total width 2 feet 6 ins.

Bookcase Doors.

[380] G. P. T. (Coventry) writes us in regard to a bookcase he is making, and asks advice as to the doors:

REPLY.—Your bookcase will work out well on the lines suggested, but the finished effect will be greatly improved by introducing either of the designs shown here in place of the leaded lights referred to. Framing for the doors should not be less than 1 in. thick, with $1\frac{1}{2}$ in. wide stiles and rails, and the barred pattern will be of the usual astragal mould, mitred up and held together with strips of black canvas glued on at back, the glass being in separate panels. Fig. 2, however, could be made of $\frac{1}{2}$ in. by $\frac{1}{4}$ in. fillet, halved

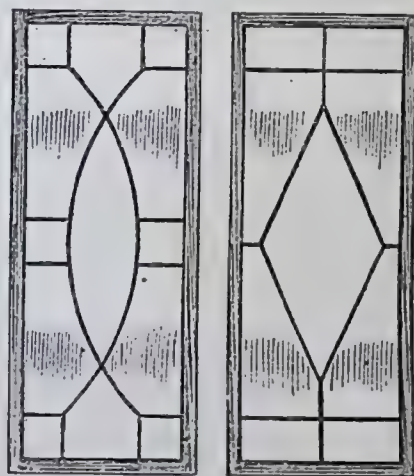


FIG. 1.

FIG. 2.

BUREAU BOOKCASE DOORS (No. 380.)

together or V cut as required to fit into the rebate, so that the glass in one piece of plate can be dropped in afterwards and be beaded in from the back. If astragal is used the inner edges of the door frame must be worked with a half of the section so that the mould may intersect properly.

Bench Vice.

[381] F. J. G. C. (Gillingham) writes:—"My Bench vice is unsatisfactory. It has a wood screw, and I have found difficulty in fitting it up to get a square full grip of material. I should be glad if you could supply me with drawings to show how best to fit it. As far as I can obtain information iron woodworkers' vices are expensive. Can you give me any information on this point?"

REPLY.—You do not indicate in your letter what kind of vice you refer to, or whether it is one of the German pattern with tail screw, or one of the leg or parallel variety. The failure to grip squarely is most probably due to you not having properly fitting guides. Instructions and a detail drawing of leg vice were given in THE WOODWORKER, July 5th, 1910, page 188, which is probably what you require. Detail sketch and instructions

for end vice can be seen in the issue for March 6th, 1909, page 320, and an additional reference to a quiet action vice occurs in issue of February 20th, 1909, pages 282-3; also January 15th, 1910, page 223. A parallel bench vice was also illustrated and described in issue November 6th, 1909, page 81. You should obtain a reliable leg or parallel iron vice for about 15s.

Sideboard Back.

[382] R. Y. (Accrington), writes:—"As a reader of THE WOODWORKER could you please supply me with a design, and dimensions of a glass back for enclosed rough sketch. I should like three glasses in back, one large centre, and two smaller side ones. I also suggest two columns, with a shelf across top, and a pediment on back of it."

REPLY.—The dimension you give indicate a rather bulky piece of furniture, and from the sketch sent it might be either a chest of four deep drawers or a base for sideboard—which, you do not say. Assuming you have the latter in mind the sketches herewith should be of assistance to you. Height from table top to upper shelf shows 3 ft., with a total height of 3 ft. 6 ins. A couple of shelves are introduced under the smaller mirrors, fitted 10 ins. high. Size of centre mirror, say 27 ins. by 27 ins., and side mirrors about 18 in. by 9 ins., bevelled. Projection of upper shelf can be 8 ins., above which a couple of shaped wing brackets and a central back fret are indicated. Bevelled wood panels are shown under smaller shelves, and the turned columns each rest on projecting panel bases (B). The whole thing is sketched to give an idea of the finished effect, while at Fig. 2 the detail to a larger scale should assist matters. The cornice (A) can be allowed 1½ in., with a dentilled member. The supporting column of

shaped shelves 4½ ins. wide. The pilasters can be glued to face of framing to show 3-16th in. thick, and the four-member mould mitred round panel openings

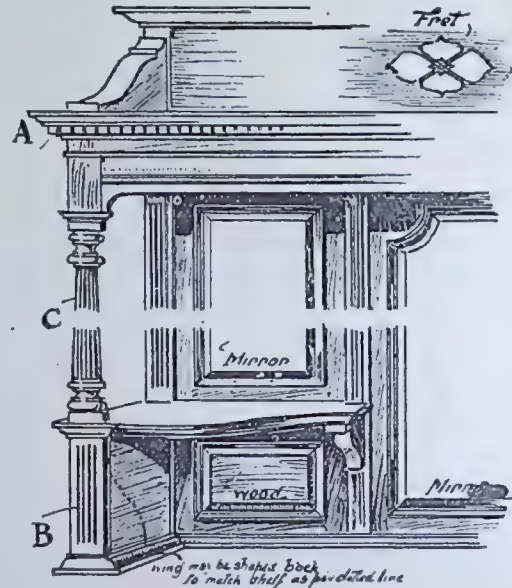


FIG. 2.—DETAILS OF SIDEBOARD BACK (No. 382.)

with ¾ in. section. The centre mirror is shown with shaped corners, or the upper part may be shaped to a serpentine line to agree with the shelves.

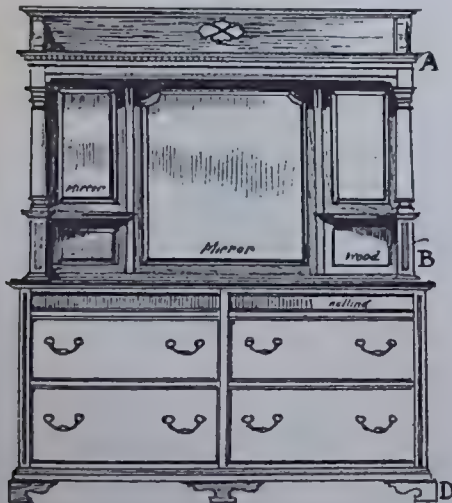


FIG. 1.—SIDEBOARD BACK (No. 382.)

2 ins. stuff, or 2½ ins. by 2½ ins., may have either a plain shaft (Fig. 1) or preferably be reeded as C, Fig. 2, or fluted. The uprights are also indicated as with four flutes. The shaped and moulded shelves, should finish ¾ in. thick, and the base mould say 1½ in. thick. Back is framed up of 1 in. stuff; outer stiles 4½ ins. wide; inner stiles 6½ ins. wide; top rail 6 ins. wide; bottom rail 3 ins. wide; and the carrying

Overmantel, with Carved Panels from March Design Supplement.

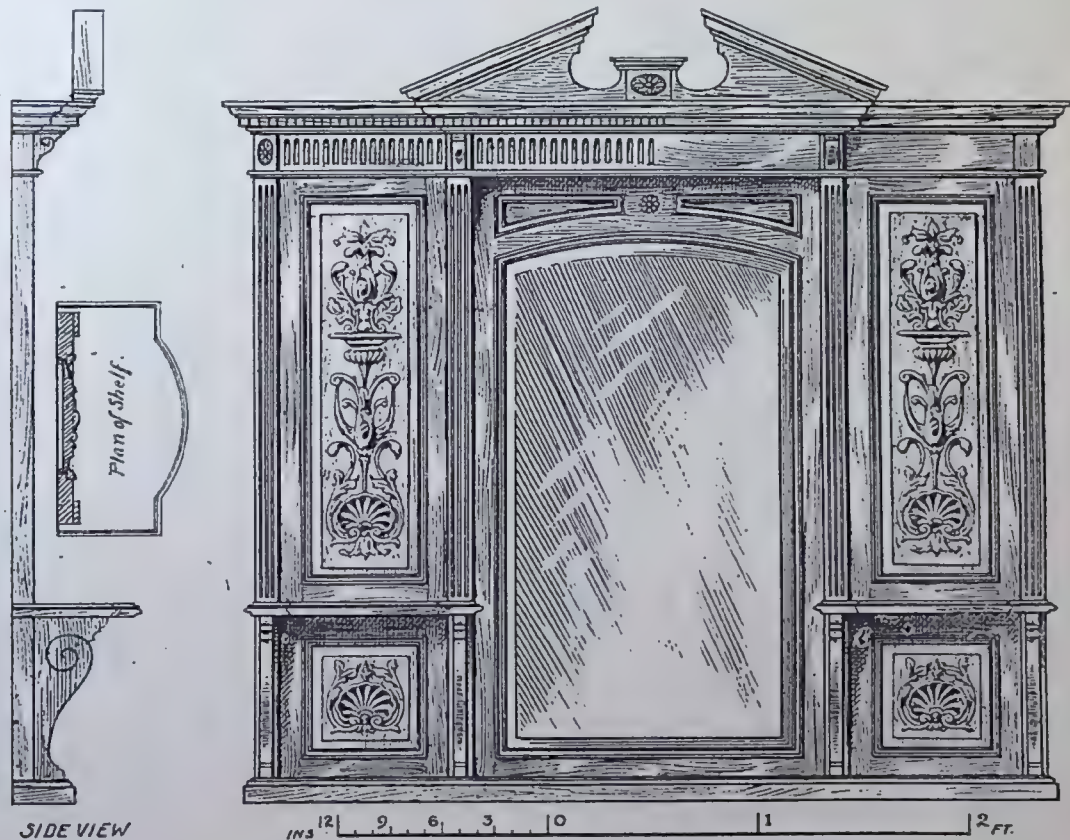
[383] E. H. (Willington) writes:—"I am about to make an oak overmantel, using the carved panels shown in your March design Supplement. I wish it to work out about 4 feet wide and about 4 feet 6 ins. high, with pediment. Could you give me a sketch elevation?"

REPLY.—To suit the carved panels issued with our recent March number it will be advisable to keep the overmantel in a quiet and dignified style, and the sketch we show is on "Adam" lines. Working to the size you suggest the difficulty is to get a good proportion for the centre part, and you can hardly do better than introduce a mirror as indicated. The mirror could be taken right up and finished square; but, although the variation shown entails a little more work, the break (introducing a curve) is an improvement. At the left hand side of sketch the cornice is shown dentilled, and the frieze fluted. This is a characteristic finish, but as the frieze is 3 ft. 6 ins. from the mantelshelf it could be left plain if you preferred. The scale shown will be a guide, but as you have necessarily to work to the size of the carved panels you should set out a full size working drawing of one side before cutting the wood. The long panels are 23½ ins. by 7 ins., and the small ones 7 ins. square. Allowing for the rebate, we suggest that the daylight openings of the panels should be 22½ ins. by 6½ ins., and 6½ ins. square respectively. The framing around the panels (including moulding) may be 1½ ins. wide, thus giving you a width of 10 ins. between the pilasters. For the pilasters a width of 1½ in. will do. You may keep the total carcase width at from

3 ft. 9 ins. to 4 feet—4 feet if your mantelshelf will stand it. Thus, as the side wings each work out at 13 ins. over the pilasters, your central portion will be from 19 ins. to 22 ins., according to the total width you can allow. The greater width will give a better result. The base should be $3\frac{1}{2}$ ins. wide by $1\frac{1}{2}$ ins. thick, moulded simply. An end projection of $\frac{1}{2}$ in. beyond the pilasters will be sufficient. The framing should be 1 in. thick, with $\frac{1}{2}$ in. or 5-16 in. thick lengths planted on to form pilasters. The shelves are $\frac{7}{8}$ in. thick, and will look better if shaped as shown. They are 14 ins. wide, $7\frac{1}{2}$ ins. deep at centre (back to front), and 6 ins. deep at ends. The supporting brackets will be 10 ins. long, 4 ins. wide and 1 in. thick. The pilasters above the shelf are fluted. Coming to the top, the cornice is 2 ins. deep (with a 2 in. projection), the frieze $2\frac{1}{2}$ ins. or $2\frac{3}{4}$ ins., and the frieze mould $\frac{1}{2}$ in. The cornice is returned at the centre, the 2 in. projecting part being supported by two shaped trusses as shown in the side view. A pediment as suggested will suit the style. It may be of $\frac{3}{4}$ in. wood with the moulding planted on.

Uxbridge Exhibition.

At the Uxbridge and District Arts and Crafts Society's Exhibition held on April 2nd, 3rd, and 4th, the handicraft section, although not quite so large as it might have been, included several good examples of work. Mrs. C. F. Thomas's Gothic cabinet had some well carved panels. Good work in this class was also shown by Miss Abercrombie, Miss Green and W. Wilson. C. G. Brown showed an inlaid mahogany fire screen (somewhat spoiled by faulty decoration at the top), and in the metalwork section Miss Harland exhibited a well mounted box. There was some good work in the schools section, including model monoplanes and specimens of inlaying and simple woodwork. The lace and needlework section included embroidery in silk, cotton and wool, crochet work lace work, drawn thread work, &c. In the oil and water colour painting and photographic sections, there was a good representation. In the loan section were many interesting items, among these being several examples of carved work.



OVERMANTEL, WITH CARVED PANELS TAKEN FROM MARCH DESIGN SUPPLEMENT (QUESTION NO. 383).

In fixing this take care that the angle mould springs nicely from the cornice. The central mould of pediment may be finished as a shelf for holding a vase. From your letter we take it you have some experience in cabinet work, and we therefore give you the sketch without entering into details of construction.

Woodwork in Farm Implements.

There is more woodwork going into farm implements and machinery now than ever before, notwithstanding that many plough beams and other things which used to be of wood are now of metal. Many different kinds of machines and implements are now used.

OAK CABINET WITH BENT IRONWORK DOOR PANELS.

THE illustration below shows a small medicine cupboard or smoking cabinet, the doors of which are fitted with bent ironwork panels. Wood panels, carvings, mirrors, pictures or stained or leaded glass panels might of course be substituted for these. The Cabinet is 23 ins. wide by 17½ ins. high.

The wood used should be oak, all parts being finished beautifully clean. It may be left perfectly plain, or given just a touch of wax polishing. The ironwork panels will show up better if the oak is kept light in finish. If lacquered brass panels are preferred to strip iron ones the wood may be fumed and waxed, or as an alternative dark American walnut may be used.

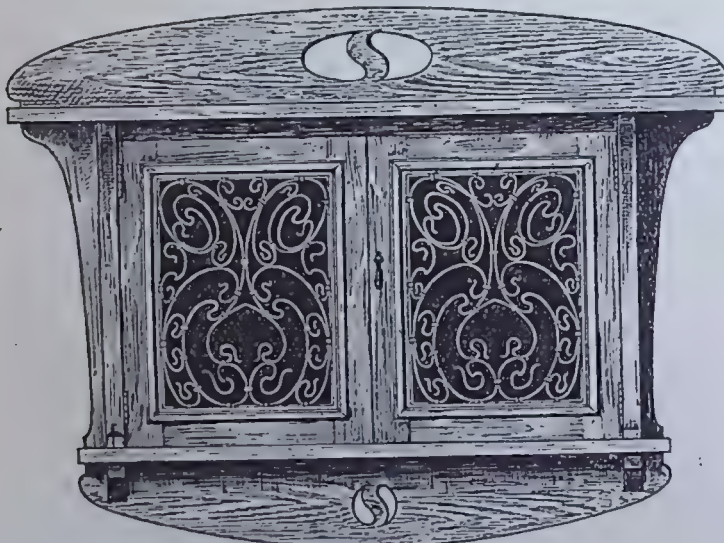


FIG. 1.—CABINET, WITH BENT IRONWORK DOOR PANELS.

If the full sized design shown at Fig. 3 is followed for the panels, the doors may be considered first, as they have to be made to a fixed size. One half of the panel is shown at Fig. 3, and the full size is 7½ ins. high by 5½ ins. wide. The doors will be glazed, the glass coming either in front of or behind the panel. It is preferable, so far as appearance is concerned, that the glass is behind; but those who object to the accumulation of dust on ironwork ornaments may frame the glass in front. At Figs. 4 and 5 the two alternative methods are shown in section. The framing in each case is 1½ in. wide by ¾ in. thick. In the case of Fig. 4 a small astragal mould (¾ in. wide) is mitred and planted on as shown, being set back ¼ in. from the edge. The framing is not moulded, but is rebated as indicated. The glass is held by a bead slip and the ironwork panel lies close against it. The panel, it will be seen, is recessed about ¼ in. It fits the daylight opening

of framing exactly, and is held by means of small pins pressed in as shown.

Should it be desired to have the glass in front, the section at Fig. 5 may be followed. The framing is rebated in front, the glass being held by a small mould, and the panel fixed in behind.

The doors will be the same size whichever method is adopted. The daylight opening will be 7½ ins. by 5½ ins. to suit the panel, and as the framing is 1½ in. wide each door will be 10½ ins. by 8 ins. As no astragal mould is shown at the meeting of the doors, the inner stiles must be finished with rebates and will consequently have to be cut accordingly.

The ends, to which the doors are hinged, are 10½ ins. long, 6½ ins. wide and ¾ in. thick. The doors may be set back about ½ in. from the edge. The ends are rebated to take a ¼ in. back.

The top shelf is 23 ins. long, 7 ins. wide and

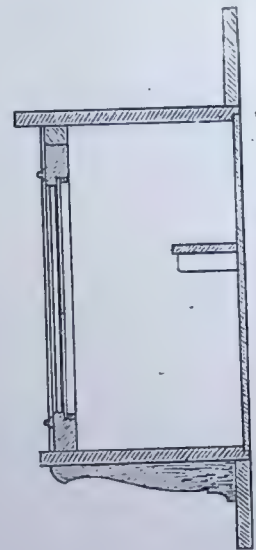


FIG. 2.—SECTION.

½ in. thick. At the front it overhangs about ¼ in. and at the sides about 2½ ins. It is rebated at the back to take the back and the top ends of side pieces, the rebate being stopped ¾ in. from each end.

The lower shelf is 19 ins. long, 6½ ins. wide, and ½ in. thick. It is rebated in the same way as the upper shelf to take the back and the side pieces, the rebate being stopped ½ in. from the ends.

The ends might, if desired, be grooved into the shelves, but this is hardly necessary. They may be screwed to both. The lower screws will be hidden by the brackets. In the case of the upper ones, passed through the top shelf, the screws will be sunk and the holes carefully stopped with little pieces of oak let in.

Above the doors is a rail, ¾ in. wide and ½ in. deep, which may be notched to the ends. The two side pieces, shaped as shown, are 2½ ins. wide and of the same length as the ends. They are



FIG. 3.—FULL-SIZE DIAGRAM OF HALF OF BENT IRONWORK DOOR PANEL.

rebated to the shelves and may, if thought necessary, be dowed to the ends. If well glued, however, dowering is not required.

The back pediment is 23 ins. long, 3 ins. wide and $\frac{1}{2}$ in. thick. Great care should be taken to secure a graceful curve, and the centre fret should be accurately drawn before an attempt is made to cut it. The apron piece is 19 ins. by 3 ins. and $\frac{1}{2}$ in. thick, and here again a good curve is essential. The pediment and apron piece may be dowed and glued.

The brackets (see Fig. 2 for side view) are $5\frac{1}{2}$ ins. by $1\frac{3}{8}$ in. and $\frac{5}{8}$ in. thick. They come immediately below the ends and may be glued in position.

An interior shelf may not be necessary in a cupboard of this size, but a narrow one (2 ins. wide) might well be fitted, supported by two fillets, as indicated at Fig. 2. A door stop will have to be provided. The doors are hung with $1\frac{1}{2}$ in. brass hinges, and a cabinet bolt and drop catch should be supplied. A lock may be added if desired.

To avoid the necessity of making an enlarged drawing of somewhat difficult curves, a full size diagram of half the bent ironwork panel is given

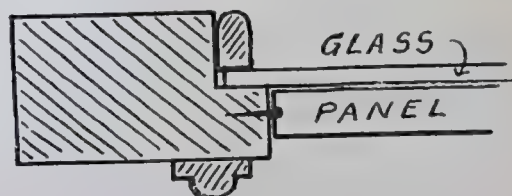


FIG. 4.—FRAMING WITH GLASS BEHIND PANEL.

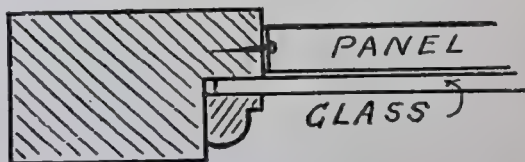


FIG. 5.—FRAMING WITH GLASS IN FRONT OF PANEL.

at Fig. 3. The strip iron used should be $\frac{1}{4}$ in. wide and of a fairly stiff gauge. The principal curve is A, a long and complex one requiring a strip 30 ins. in length. Apart from its length, there is no real difficulty in forming this curve; and, although a little trouble may be experienced in coaxing the different parts into shape, the other curves will keep it right when the panel is completed. Only half of the piece B is shown, and its total length is $9\frac{1}{2}$ ins. C is an important curve, $11\frac{1}{2}$ ins. long; D comes out at $5\frac{1}{2}$ ins., E at $5\frac{1}{4}$ ins., F at 8 ins., and G at $3\frac{1}{2}$ ins. The curves are clamped by collars, and the whole is held by a rectangular border $7\frac{1}{2}$ ins. by $5\frac{1}{2}$ ins. The border may be drilled at two or three points at each side; by passing small pins through these into the edge of the door framing the panel is securely held in position. Before being fixed in the panels must have the usual coat of eggshell black paint.

WHEEL MAKING.

4.—Putting the Wheel Together.

IN the first article of the present series (January issue) we mentioned that, in cutting out the felloes for the outer rim of the wheel, it was advisable to strike them out to a somewhat larger radius than was actually required. This applies to the wheel we are at present dealing

off when together. The rounding of the inside should be left till later on. The tenoning of the spokes to fit the hub and the mortising of the latter have already been described; therefore we may consider the hub and spokes as being ready, and the felloes as shaped to the correct curves, the next thing to do being to drive the spokes into the hubs.

To facilitate this the hub should be well soaked in hot water, and each spoke should be dipped in

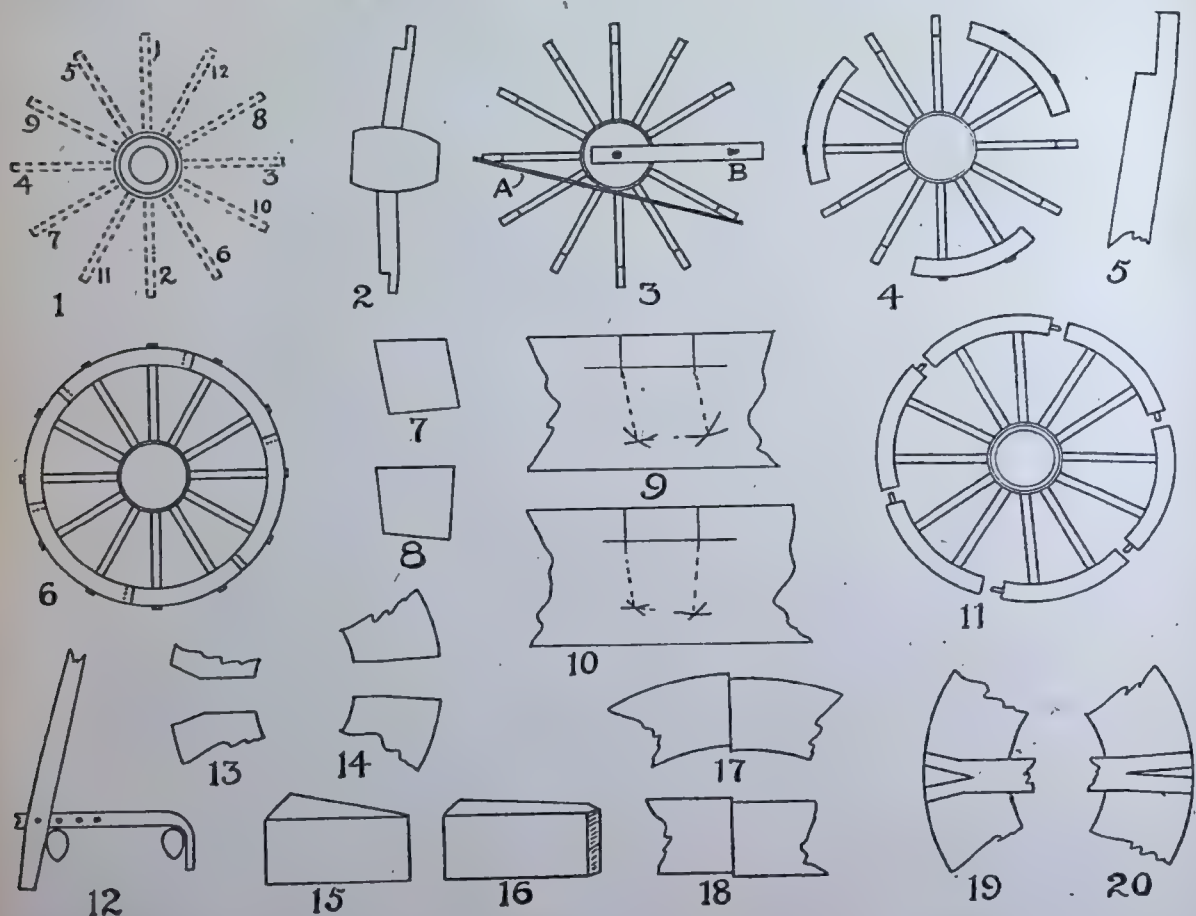


Fig. 1.—Order of Driving Spokes. Fig. 2.—Spokes tenoned. Fig. 3.—Testing Spokes and marking Shoulders. Fig. 4.—First Stage in fitting Felloes. Fig. 5.—Spoke tenoned; shoulder square from face. Fig. 6.—Second Stage in fitting Felloes. Figs. 7 and 8.—Irregular Sections of Spoke Tenons. Figs. 9 and 10.—Mortises set out for Figs. 7 and 8. Fig. 11.—Felloes entered on Spokes. Fig. 12.—Method of using "Dog." Fig. 13.—Incorrect way of opening Mortise at Back. Fig. 14.—Correct way. Fig. 15.—Wedge wrongly shaped. Fig. 16.—Correct shape of Wedge. Fig. 17.—Felloes uneven, edgeways. Fig. 18.—Felloes uneven on flat. Fig. 19.—Effect of incorrect Wedge. Fig. 20.—Effect of correct Wedge.

with as well as to the small barrow wheel there described. Thus, in marking out the rims of a wheel five feet high, the radius should be thirty-one inches for the outside of the felloes; and, as the felloes should be 4 ins. deep, it follows that the inside radius will be 27 ins.

Each felloe must be shaped correctly with adze and drawknife, except at the extreme ends where they may be left slightly full to allow for cleaning

water before it is inserted. The method of holding the hub while spoking has already been described, and no more instructions should be needed except to state that the spokes should be driven in the order shown by the numbers in Fig. 1, adjusting them if necessary by means of the curve shown in the previous chapter (March issue.)

After spoking, the wheel should be laid face upwards (that is the small end of the hub upwards)

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on the wheel stool, and the face of the spoke tenons formed by planing the ends of the spokes off as in the section, Fig. 2, testing them by means of a straightedge as A, Fig. 3. The distance of this straight part of the spokes must as nearly as possible be equal in each from the hub, and if they are driven exactly true they will be alike. A small error, however, will cause a difference in the distance. In this case it is best to give and take to equalise matter; it is absolutely necessary that the tenons be equal all round the wheel, or the latter will not run true when completed.

After facing the tenons, turn the wheel over, and with a straight piece of wood pivotted to the centre of the hub in which is fixed a scratch point, the shoulders on the spokes may be marked, as in Fig. 3, where the pivotted piece of wood is shown at B. The spokes are shown as marked for the shoulders. The shoulders must be squared from the face, and the tenon gauged parallel from the same, so that when cut they will be as Fig. 5. The most convenient way of cutting these tenons is to saw in at the shoulder lines, and do the rest with mallet and chisel, sawing being out of the question.

Adjusting the Felloes.

Now take three of the felloes and cut them off so that the ends come midway between the spokes and radiate towards the centre of the hub (as in Fig. 4) when laid in the position shown. The remaining three felloes can now be laid on the others, as in Fig. 6, and by marking underneath the exact length will be given, so that, if squared across at the marks and sawn off, the six felloes will just form the ring and will all touch the shoulders of the spokes.

While in the position shown in Fig. 6, but all cut in, each of the felloes should be marked across underneath at each side of the spoke. By squaring these marks across on the inside and the outside, this will give the size of the mortises; but as the spokes will not all be exact in size the felloes should be numbered, so that they will go back to the same place again.

It is quite possible that the sections of the spoke tenons will be far from true, something like Figs. 7 and 8; and, as it is necessary that the mortise and tenon be a perfect fit on the inside of the wheel, each mortise should be set out to fit its special tenon, a gauge line from the face of the felloes being the guide to work from. Thus Fig. 9 shows the mortise set out to fit the section of tenon in Fig. 7, and Fig. 10 that in Fig. 8. The method of doing this is quite simple. With the compasses take the two diagonals of the tenon, and strike the small arcs of circles as shown. Then take the width of the sides of the tenon and strike in the same way. By connecting the joints where the lines cross, as dotted lines, the correct shape of the mortise, no matter how irregular, will be obtained.

The mortises must be opened out at the back to allow the tenons to expand by wedging, and the opening should take the form of Fig. 14, not as Fig. 13. Of course it will be understood that, in

making these mortises, a great part of the wood will be removed with the brace and boring bit; otherwise look out for broken chisels.

Fixing the Felloes.

The instructions given for the boring for, and insertion of, the dowels in the end of the felloes given previously applies here also, so that we can proceed to put the felloes on to the wheel. To do this it will be necessary to pull the ends of each pair of spokes towards each other, and we must have recourse to the dog described in the previous article (where by the way we accidentally showed the iron portion the wrong way up.) The method of using the dog is shown in Fig. 12, its purpose being to so bring the spokes in that the felloes can be entered on to the tenons, as in Fig. 11. When all are entered as shown, they must each be drawn on gradually so that the dowels find their position as the rim works home and all comes up tight together.

After the felloes are home, the ends of the spokes should be split and the wedges inserted, wetting them first. The wedges should not be made as Fig. 15, but as Fig. 16. The effect of the obtuse wedge in conjunction with such a mortise as Fig. 13 is shown in Fig. 19; the spoke is fractured, and the wedge liable to work out at the first opportunity. Whereas, if the mortise is as Fig. 14 and the wedge as Fig. 16, the result is as Fig. 20, the spoke intact and the wedge with good holding power.

The felloes at the joints will probably be found to come, some like Figs. 17 and 18, either at the sides or edges or both; but this can be eased off with draw knife and spokeshave, or with the plane if sideways. We omitted to mention the rounding off of the felloes on the inside before putting together. This should be done after fitting, but before the felloes are driven on, leaving the parts where the shoulders of the spokes come intact.

It is better for the joints of the felloes to be somewhat slack rather than too tight, and they should fit on the inside, being left slightly off on the outside. When the iron tyre is put on this will bring both of these faults right.

Pine and Fir for Interior Woodwork.

There is comparatively little soft wood like pine or fir used for furniture or interior finishes. For some years pine and fir have been looked upon as coarser woods which are not capable of a perfect artistic finish. Less care was lavished on them than on other kinds of wood. The public took it for granted that good furniture and interior woodwork must be made out of some hard wood. If we look back on past usage, we find that pine was used very extensively in interior finishes. Old farmhouses and quaint mansions show pine finishes that have, with the passing of years, taken on that peculiar finish so dear to the antiquarian. As regards durability, pine does not stand behind other wood. Furniture made hundreds of years ago is still in as good condition and as fit to it was when first made. How much the ancient master woodworkers thought of pine may be judged from the fact that many of these pine doors and the various pieces of furniture were inlaid with woods like walnut, cherry, ebony and mahogany.



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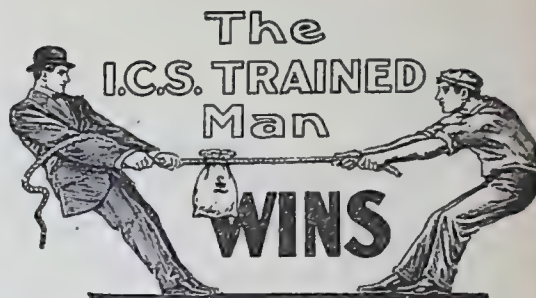
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The "legs" slope in both directions, as may be seen from Figs. 1 and 2. Thus it is obvious that the stool will not readily topple over, even should one stand on the very edges; and further it gives it a more stable appearance.

FIG. 1.—FRONT VIEW.

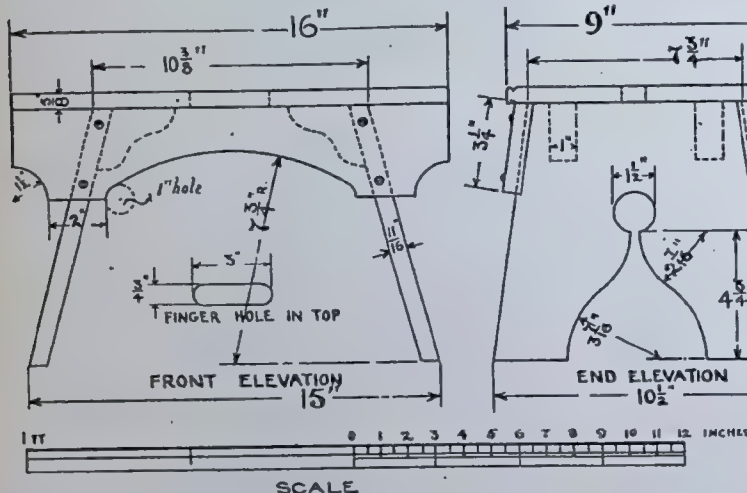


FIG. 2.—END VIEW.

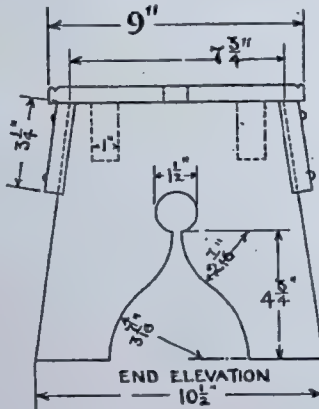
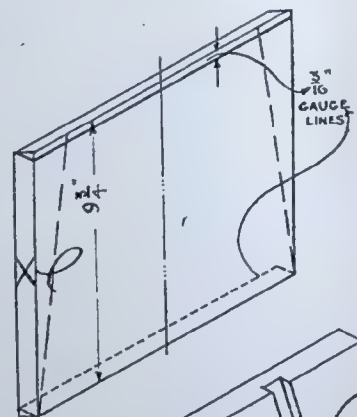


FIG. 3.—GAUGING.



Procure the wood in three pieces, each $\frac{3}{4}$ in. thick, one for the top, one for the legs, and one for the two side pieces. Commencing with the top, dress to 16 ins. long by 9 ins. wide by $\frac{3}{4}$ in. or 11-16 in. thick, and bead or chamfer the two upper edges (shown in the end elevation). The finger-hole will be carefully marked on, the side lines being gauged, then cut out by first boring a $\frac{3}{4}$ in. hole at either end and sawing out the intervening waste with a pad or bow-saw. Finish by paring carefully to the gauge lines.

Preparing the Parts.

Proceed now to plane the wood for the legs. After planing the face and gauging and planing to 11-16 in. thick, it will be necessary to plane one edge square and straight. This being done, plane the two outer ends square to the face and edge. Next measure $9\frac{3}{4}$ ins. inwards from each end, and square lines round the wood. Saw to the waste side of these lines and plane to them, finishing again quite square to the face and edge.

On looking at the front elevation it will be seen that the upper and lower ends are bevelled, so as to lie flat at the correct angle. The angle is about 100 degrees, but if the gauge is set to 3-16 in. and a line run on opposite sides at each end sufficient will

be removed to give the required slope. So, first of all finish each piece to $9\frac{3}{4}$ ins. long, then gauge the lines (see Fig. 3), and, holding the plane at the bevel, work carefully to these lines. For working end grain the plane must be sharp and finely set.

Now mark on and cut out the design for the ends. Bore the $1\frac{1}{2}$ in. hole where shown first of all. The slope of the edges will next be marked. Each piece is $10\frac{1}{4}$ ins. wide at the bottom and $7\frac{3}{4}$ ins. at the top. Measure carefully from a centre line, so that the sloping sides will be normal to the true ends.

The two side pieces will now be taken in hand and planed to 16 ins. long by $3\frac{1}{4}$ ins. wide by 11-16 in. thick. No particular difficulty presents itself in marking and cutting the design. A good method to follow is shown by Fig. 4. The two edges may be clamped together and the 1 in. holes bored. This will give the semi-circles entire. The pupil will not

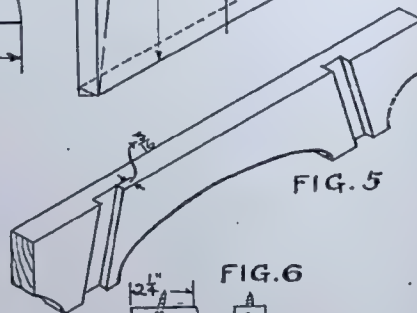


FIG. 4.

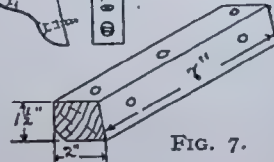
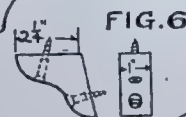


FIG. 7.

find any troublesome joints in this stool; in fact, the idea of making a trench for the junction between the legs and the top is often sufficient to prevent many from attempting the work. For one thing, such a joint is not strong here, when the legs are splayed, but from Fig. 5 it will be seen that simple grooves are cut 3-16 in. deep on the inner surfaces of the side-pieces, so that the legs slip into these. On these inner surfaces very carefully mark off the positions which the legs will occupy against the sides, and cut the grooves out 3-16 in. deep.

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If the legs are a nice fit in these shallow rebates they will be prevented from spreading.

The top will be secured to the legs by means of four small brackets, fitted neatly to the angle. These will be fixed to the legs first by stout screws, then turned over, and the remaining screws fixed into the top. Let the brackets be about $2\frac{1}{2}$ ins. by $2\frac{1}{2}$ ins. by 1 in. thick, secured by $1\frac{1}{2}$ in. No. 12 screws (Fig. 6).

If the four brackets be considered troublesome to make, then a single piece of wood will do (Fig. 7).

Finishing the Stool.

In assembling, first fix the brackets to the inner surfaces of the legs, then glue the side pieces on to the legs and fix with two $1\frac{1}{2}$ in. No. 10 round head brass screws in each joint. (Allow the sides to project sufficiently high, so that the upper edges may be planed to the correct slope flush with the tops after the glue has set.) Next, turn over the stool and screw the brackets to the top.

The stool may be nicely painted green or red; or, better, it may be oak varnished. In any case the wood ought to be given a coat of size (very thin glue), applied hot, and when thoroughly dry rubbed down with fine glasspaper to a smooth surface. By sizing wood the surface is rendered hard and compact and paint or varnish work nicely over it. All glass-papering and sizing should be completed before assembling the parts.

THE NATIONAL ASSOCIATION OF MANUAL TRAINING TEACHERS.

Easter Conference Exhibition.

THE recent exhibition of educational handwork, arranged by the above Association in connection with their annual conference, was held on March 25th and 26th at the London Day Training College, and was generally considered to be the most successful of any yet held. The whole of the table space surrounding the exhibition hall was filled with handwork, ranging from the infant school to craft school. The great feature was the absence of the set schemes so much to the front in previous exhibitions, and practically every educational authority or private exhibitor who lent examples of handwork sent an exhibit representing the latest advances in Manual Training. The standard of work was so good that it is impossible to state where the best exhibits came from, and there is no doubt that every visitor to the exhibition must have been impressed with the great advance that has been made during the past year or so. There was ample evidence that Manual Training is treated both as a subject and a method, and on looking at the great variety of work done by the lower standards there was no need to doubt the value of handwork as an educational subject.

Woodworkers' Tools.

Few firms are in a position to issue catalogues of the size of a volume now lying before us—the latest tool list of Richard Melhuish, Ltd., of Fetter Lane and Holborn, London, W.C. The catalogue is a fully illustrated quarto of 338 pages, and includes ranges of tools for builders, joiners, carpenters, cabinet-makers, wood carvers, picture-frame makers, fret-cutters, metal-workers, etc. The name of Melhuish stands for much in the tool world, and for usefulness and quality their goods can always be depended upon.

COMMENTS ON READERS' CARVED WORK.

Carved Fruit Panel.



CARVED-PANEL.

By J. S.

J. S. (East London, South Africa) sends us a photograph of a panel he has carved from one of the **WOODWORKER** designs. The panel is done in $1\frac{1}{2}$ in. thick oak, and is very much undercut. It is interesting to know that it took eleven hours to do, and that it obtained the first prize at the Art and Craft Exhibition held in East London. It is also very satisfactory to know that it has not been sandpapered. The design has been well interpreted. The fruit is good, although rather too smoothly finished. Perfection of form is the essential thing, and if that is obtained the smoothness of surface here shown is unnecessary. It must be remembered that the work should show the influence of the tool it has been done with. The carving tool leaves an impression of a particular kind, and this should be clearly shown. Character and vigour are thus preserved. The leaves are well shaped. The veins are less satisfactory, being merely incisions cut in the surfaces of the leaves. Veins should, in nearly every case, stand up after the manner in which the midribs are done, but on a less scale. The stalks, being completely detached from the ground, are cleverly done, but such treatment is antagonistic to the law of materials, a comment also applicable in the case of leaves which lie across the grain, and which are carved with their ends raised.

Writing Desk.

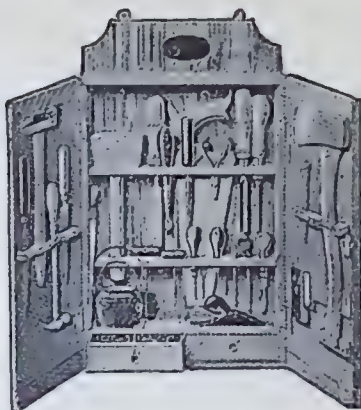
J. J. (London).—The writing desk is an interesting piece of work, and certainly original in design. As far as can be judged from the photograph, the craftsmanship is good and the carving in keeping, particularly on the flap front. It is rather a pity that the front surface should be used for the writing table, as in use it will be impossible to prevent signs of wear, which will somewhat spoil the effect of the piece of furniture when closed up. There is no particular reason why a writing flap should be so deep, and we think that quite as convenient desk could be made the same depth by making the lower part with two doors to open out and support the flap, which could be made to fit against the top shelf. This would bring the back of the flap into use as a writing table. Otherwise we have only praise for the work.

To Clean a Shellac Brush.

Place the brush in a strong, warm solution of borax and water, until the gum is cut, then wash out in warm water. If the brush has become hard, allow it to remain where it will be warm enough till the gum softens. This is an inexpensive and effectual way to clean a brush.



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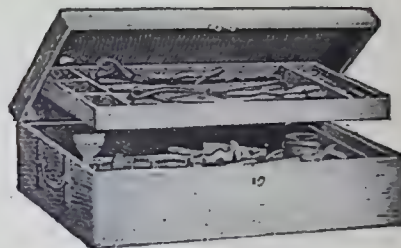


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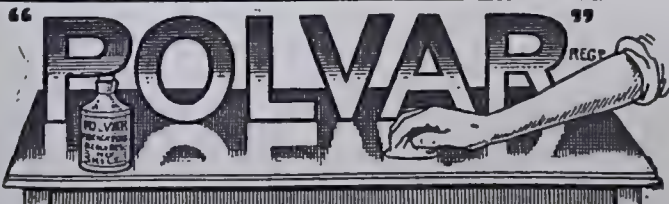
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NOTES FOR WOODWORKERS.

Sandalwood.

SANDALWOOD, widely known for its rich fragrance, is a rather hard and heavy wood, varying in colour from yellow or fawn-coloured to reddish brown. The odour, which is most pronounced in deeply-coloured specimens, resembles a mixture of musk and rose. The religious sentiment of thousands of human beings is still intimately associated with this wood. Buddhists consider a piece of it 4 to 6 ins. in diameter the most acceptable offering a person can make to idols in a temple. Indian sandalwood is rarely found in forests, and is commonly a small tree under 30 feet in height. The most fragrant wood is that grown in dry, sunny, rocky, mountainous districts, or soils of volcanic origin, and the part nearest the root is considered the best. The sapwood is inodorous, and after trees are felled it is a common practice to remove the limbs and bark and bury the trunk for 6 or 8 weeks or leave it lying on the ground in order that white ants can eat off the sapwood. It is claimed that the odour of the wood repels insects, and on this account, as well as its natural beauty, it has been used in France for making wardrobes, trunks and chests for the nobility. It is also claimed that a handful of shavings of the wood will prevent moths from attacking woollens and furs, and protect preserved natural history specimens. The wood is too precious for ordinary use. In *Woodcraft* it is stated that there are twenty different species of sandalwood, but none equals *Santalum album*. The wood known as red sanders and sometimes wrongly called "sandalwood" contains no oil and is quite odourless. It is obtained from a leguminous tree found in Ceylon, and is a native of Southern India.

Circassian Walnut.

Probably the United States is the largest consumer of Circassian walnut, one of the world's best known and most expensive cabinet woods. The high cost of this walnut is due to the scarcity of the beautiful figured variety demanded for furniture and interior finish, for the tree itself is more widely distributed than almost any other of commercial importance. The demand for the best wood, however, has always outrun the supply. Even in the eighteenth century, when wars in Europe were frequent, so much Circassian walnut was used for gunstocks that the supply was seriously depleted. Early in the nineteenth century the wood of 12,000 trees was used for this purpose alone. The tree is native to the eastern slopes of the Caucasus, and ranges eastward to the foothills of the Himalaya Mountains, from which it extends southward to Northern Indian and the mountains of Upper Burma. It has been widely planted in Europe, and also in the United States under the name of English walnut. Much of the Circassian walnut now used comes from the Black Sea and from other parts of Asia. Many good African, Asian and South American woods resemble it in some respects, though none possesses the magnificent figure, delicate tones and velvety texture of the genuine variety.

Preventing Decay in Wooden Tubs.

Wooden tubs in which liquids are kept for a long time are liable to decay and give rise to a growth of fungi, making the wood soft and leading finally to leaks. The following method for preventing this destructive effect has been recommended. A surface

finish is made up of 2 lbs. of brown shellac, $3\frac{1}{2}$ ozs. of Venetian turpentine, $3\frac{1}{2}$ ozs. rosin, all melted in a large kettle. After the liquid has cooled, but is still mobile, five quarts of 90 per cent. alcohol are added. In order to prevent any danger of fire, the alcohol should be added at some distance from the fire. The adding of the alcohol makes the shellac and rosin form a viscous, sluggish liquid, which is easily applied to the wooden tub and will form a protective surface. The only precaution to be taken before applying it is to see that the wooden tubs are thoroughly dry, so as to allow the finish to soak into the wooden pores. If the wood is wet or even moist, the rosin will separate from the liquid and remain at the surface instead of penetrating. One or two coats are sufficient to assure a satisfactory finish.

How Japanese Colour Prints are Made.

The wonderful results obtained by the Japanese in colour printing has often been commented upon, and a good deal of interest has lately been aroused as to the methods employed. These, in reality, are comparatively simple. The artist draws a picture on thin paper, which is then handed over to the wood engraver. After pasting the sketch face down on a block of wood (a piece of cherry which has been kept in the shade for years) the engraver cuts away the superfluous wood, leaving the outline in relief. The printer then applies black paint to the block and lays it on a sheet of paper and with the *baren* or pad exerts sufficient pressure to make a print of the raised outlines. Copies of this black proof are then worked upon by the artist, who colours them, one coloured sheet for each of the colours; when finally printed these produce the desired result by combination. The coloured impressions from the original block are each treated by the engraver in the same way as was the key block, the necessary portions of the wood surface being left in relief. Many beautiful examples of the work may be seen at Mr. Ken Hoshino's gallery, 57, Chancery Lane, London, E.C.

EDITORIAL NOTICES.

Contributions.—The Editor invites correspondence and original contributions on all subjects relating to woodwork and other handicrafts. All MSS. should be accompanied by a stamped and addressed envelope for return if unsuitable.

Books for Review, price lists, tools, materials, etc., sent for inspection, enquiries and all correspondence relating to the literary portion of the Magazine should be addressed to the Editor.

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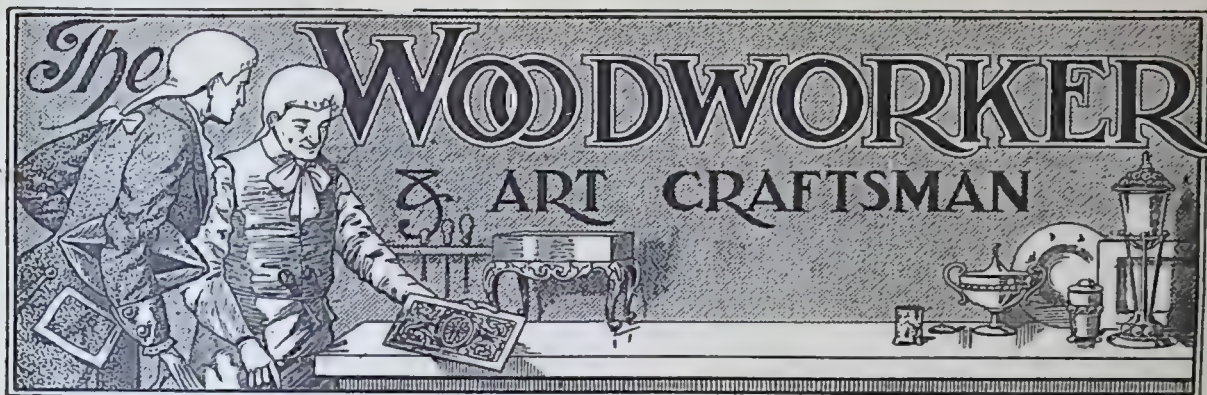
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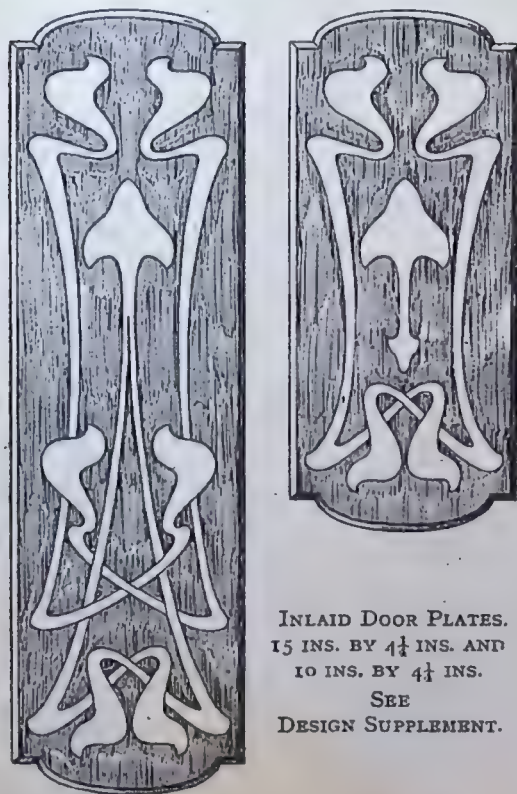
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DESIGNS FOR THE MONTH.

Inlaid Door Plates. Carved Paper Knife. Bent Ironwork Letter Rack.

ON this month's Supplement will be found three designs: the inlaid door plates illustrated here, and the carved paper knife and bent ironwork letter rack shown on the next page.



INLAID DOOR PLATES.
15 INS. BY $4\frac{1}{4}$ INS. AND
10 INS. BY $4\frac{1}{4}$ INS.
SEE
DESIGN SUPPLEMENT.

if required. On large doors with wide stiles these finger plates will have a handsome appearance.

There are three ways in which the inlaying may be carried out. Ordinary marquetry veneers may be used, the finished inlay afterwards being mounted on a solid 3-16 in. or $\frac{1}{4}$ in. background. In this case the background may be shaped and its edges chamfered after the inlaid veneer has been glued down.

Another plan is to carry out the inlaid design in what is known as "overlay" wood—that is, wood of about 1-16 in. thickness. As a rule the amateur finds this more easy to handle than the thin knife-cut veneers. The ground will be cut to the shape of the outline of back shown, but taken in about $\frac{1}{8}$ in. at each side. This is afterwards mounted on a 3-16 in. background.

The third method is to do the whole work in the solid. The average fretcutter, who is not accustomed to the handling of veneers and who may not have the proper appliances for glueing, will probably adopt this plan. He is used to cutting stout wood, and when the saw work is done he is free from the anxieties attending the application of a veneered inlay to its background. If solid inlaying is preferred a thickness of 3-16 in. ought to be sufficient. Thus, if two boards are cut together, the aggregate thickness will only be $\frac{3}{8}$ in. Solid inlay work should always, if possible, be done with a treadle fretsaw. The cutting-table can be tilted to a very slight angle so that the ornamental part to be inlaid will fit with a wedge-like tightness to its background. The edges of the plate may be gently chamfered as indicated on the design.

The woods used for the finger plates depend on the colour of the door and on the general surroundings. For obvious reasons it is better that the groundwork should be dark, and varieties like rosewood, dark walnut, padouk, teak, mahogany, ebonia, etc., are all suitable. A wood such as silver-grey, which is not readily soiled, might be chosen if a fairly light ground were wanted. Only two woods are required for the ornament. These may differ so far as colour is concerned, but should

The inlaid finger plates have been designed to a size larger than the usual plate found on doors. The upper one is 15 ins. and the lower one 10 ins. The width is $4\frac{1}{4}$ ins., but might be reduced to 4 ins.

be approximate in tone. It is not desirable that one colour should be more prominent than another, for if this happens the idea of the ornament will be destroyed. The finish may be bright or dull, according to the woods used.

Carved Paper Knife.

It may be admitted that a carved wood paper knife is looked upon as an ornament rather than an article to be used every day. Even so regarded, however, the design shown on our Supplement is worth making by those who have had some

difficult matter to coax it back into its original form with the aid of a pair of pliers.

The rack shown on our Supplement is about $9\frac{1}{2}$ ins. long and $6\frac{1}{2}$ ins. high. It has two divisions, the sides being about 4 ins. apart. The two sides (that is, the back and front) are alike, the design being clear from the little sketch shown here. It will be noticed that the feet are strongly held, and that there will be little danger of the rack yielding at this part. The central partition is similar to the sides, but simpler. The top circular form is dispensed with, and some of the smaller



CARVED PAPER KNIFE, 16 INS. LONG. SEE DESIGN SUPPLEMENT.

experience in carving in the round. In length the knife is 16 ins., and it may be cut from a piece of wood $2\frac{1}{2}$ ins. wide and 1 in. thick. A hard and close-grained wood should be used. White maple and sycamore are suitable if a light-coloured knife is preferred. For a dark knife either American walnut or Burmese teak might be taken. Of course woods like ebony and boxwood are suitable for a paper knife, but both are not only costly but are hard to cut. Unless the reader has had experience in carving these harder woods he will be wise to use one of the others named.

As the article tapers the whole way down from the end of the handle to the tip of the blade, it will be found easier to do this preliminary work with the plane, tapering the wood on both sides. Care, however, must be taken not to thin the wood too much at the point where the blade springs from the handle.

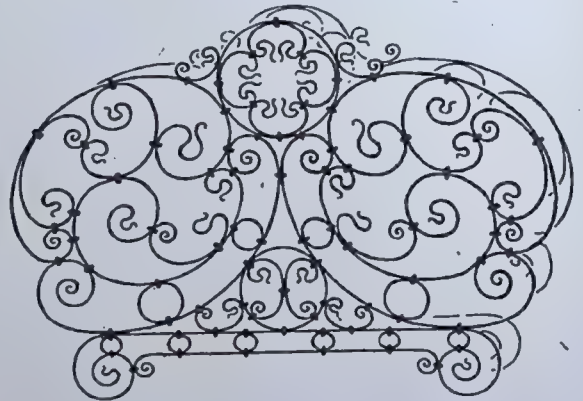
The leaves on the handle call for careful modeling, but as this part must be comfortable for the fingers to hold the relief should not be high. Sharp points must be avoided, and edges should be softened. It is unwise to have the blade too thin, or to try to work it to a very sharp edge. A knife of this size is not, of course, intended for books or smaller magazines, but for newspapers, and for this purpose a keen edge is not required. The edge will get readily injured if made too fine, and an accident of the sort should be guarded against.

Bent Ironwork Letter Rack.

Of the many kinds of article suitable for making in bent ironwork few can be more useful than the mantelshelf letter rack. White envelopes form a capital background for the black scrollwork, and with ordinary care a letter rack can be made strong enough to last for many years, even if in daily use. The iron ornament does not break; if a collar-band works loose it is easily tightened; and if a curve gets accidentally bent it is not a

curves are omitted. There is no strain on this middle partition, but it is wise to introduce it, as it helps to prevent the overcrowding of the rack—a common fault in every house where a letter rack is in daily use.

The two sides are joined together by four cross bars which are clamped to the upper of the two straight base lines shown in the illustration.



BENT IRONWORK LETTER RACK.
 $9\frac{1}{2}$ INS. BY $6\frac{1}{2}$ INS. SEE DESIGN SUPPLEMENT.

These cross bars are stiffened by three longer bars running lengthwise with the rack. If these bars are firmly clamped the letter rack will be quite rigid. The central partition rises from the middle cross bar, to which it is fixed with collar-bands in the usual way. Collars are the only means of fixture required, neither soldering nor riveting being necessary. If thought desirable a touch of solder might be used to strengthen the cross bars at the points where they interlace, but this is not really necessary if they are properly fixed otherwise.

The strip iron used may be 3-16 in. or $\frac{1}{4}$ in. wide. The lesser width looks better if a stout enough gauge is used. On no account should very thin iron be used. For most of the collar-bands iron $\frac{1}{8}$ in. wide will be sufficient. For the cross bars, however, it is well to use $\frac{1}{4}$ in. strips. As usual, the finished rack should have a coat of eggshell-black paint, care being taken not to apply it too thickly.

be remembered that we had a series of articles on practical forge work.

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Wrought Iron Panels.

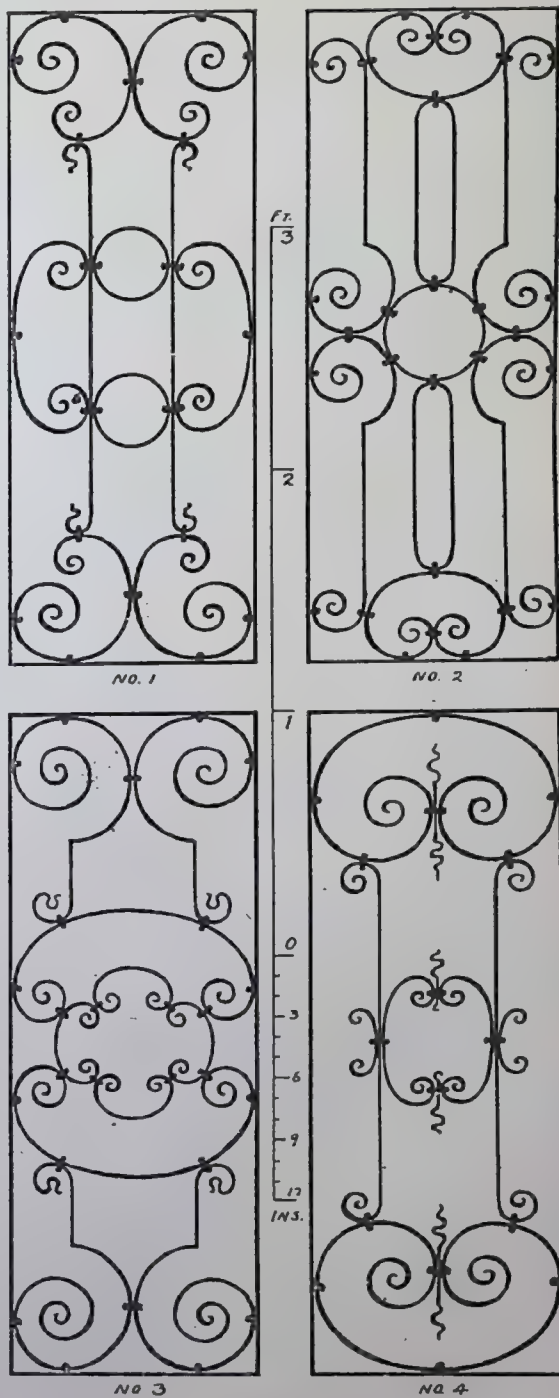
On the next column we show four design suggestions for door or window panels suitable for carrying out in light wrought ironwork. A scale is given, and from this it will be seen that the panels work out approximately 32 ins. or 33 ins. in length, and a foot wide. This scale is given by way of suggestion only, and for enlarging purposes a scale can easily be set out to suit the intending worker's own special requirements.

The panels are designed for upright ones, such as are frequently found on entrance doors. Nos. 2 and 3, however, would suit almost equally well for an oblong position, and could be used for window screens or grilles. For larger work such as railings, designs 1, 2 and 4 would look very handsome in a series of repeats. For a door or window in which a pair of panels is to be placed No 4 will perhaps be the most suitable.

So far as size is concerned, the scale given is 1 $\frac{1}{4}$ in. to the foot. Obviously, however, almost any size will do for such designs, provided that they are not much over 3 feet in length. Thus a scale of 1 in. to the foot may be regarded as the maximum. In a very small size (say, twice as large as shown) all four might be used in strip iron for various articles. Panels of about 18 ins. in length could be worked in iron $\frac{3}{8}$ in. by 1-16th in. For those carried out to the scale given iron $\frac{5}{8}$ in. wide by 3-32 in. or $\frac{1}{4}$ in. thick will be required.

No difficulty ought to be found in enlarging any of the designs. The length required must first be decided upon and a scale drawn to suit. From this scale the pattern may be set out full size. The bosses on some of the spirals may be worked fish-tail if this is desired, and other little modifications may be made. It is probable that, in making a panel to fit a certain space, some alteration of the proportion will be necessary; but all four designs are suitable for adaptation as regards width, and if a scale is set out to suit the height it is easy to adjust the width as required.

In last month's issue we had an explanatory article on a wrought iron gong bracket, and in recent volumes (November and December, 1911, and January, February, and March, 1912) it will



DESIGN SUGGESTIONS. FOUR WROUGHT IRON PANELS.

PANELLING.

How to Panel a Room.

(Continued.)

WE can now enter into details as to the best way to make up the various parts of the panelling shown in our last chapter (April issue), and propose here to deal with the blank side of the room. At Fig. 1 we show the panelling for this as complete in the shop, not fixed as shown before. When together, as in Fig. 1, the vertical section through the panels will be as Fig. 16, and

permanently fixing together the dado (Fig. 3) and the frieze (Fig. 2), fitting the intermediate muntins and panels, also the outside stiles, and cleaning the whole off as though it were finished. The stiles can then be removed and the loose parts taken out, thus leaving the remaining parts convenient for handling.

Fig. 19 shows the bottom rail, tenoned and mortised. The top rail will be done in exactly the same way, making use of double tenons to fit into the stiles, and so arranging the measurements that when the plinth and cornice are fixed the width of these rails will show correctly (as in the drawings in the previous chapter.)

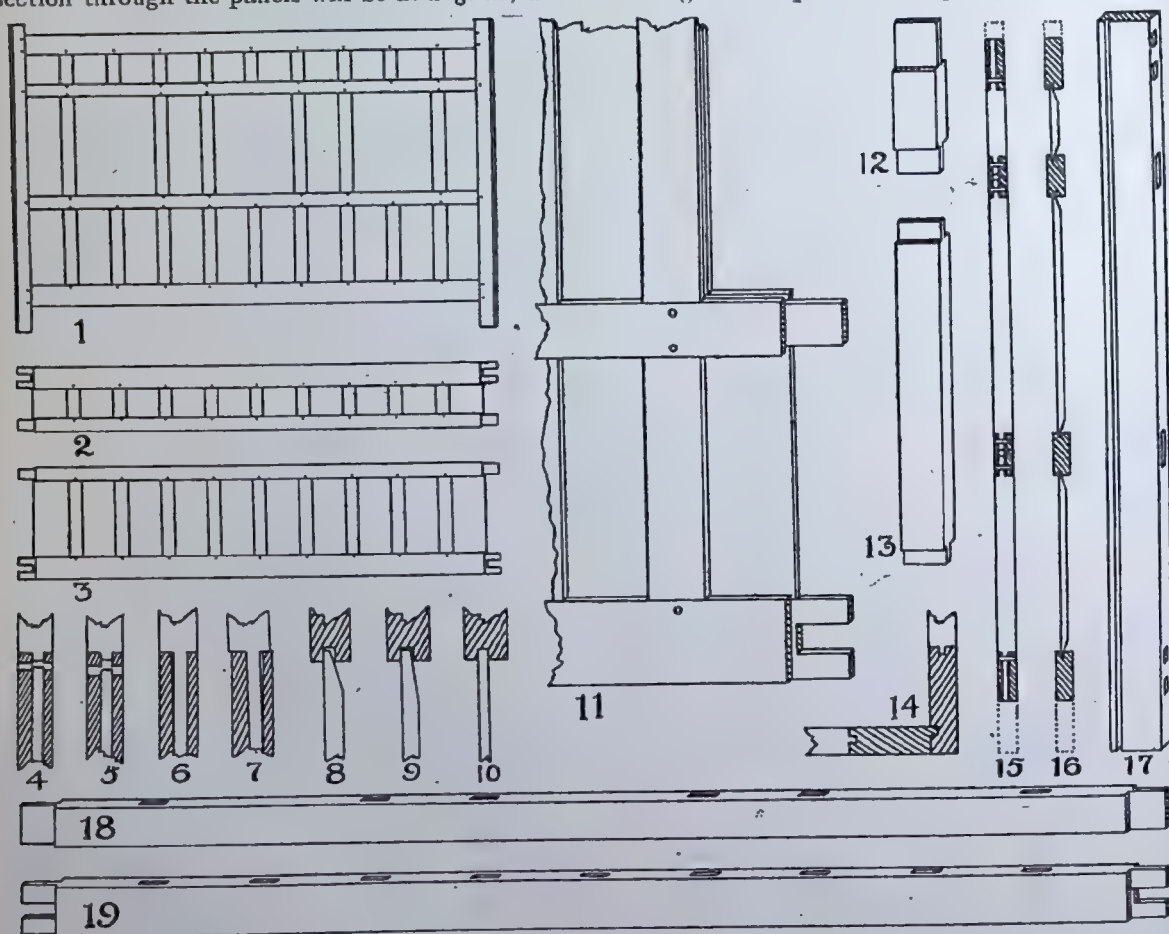


Fig. 1.—Blank Panelling as finished in shop. 2.—Frieze made separately. 3.—Dado made separately. 4.—Draw-boring correctly done. 5.—Draw-boring incorrectly done. 6.—Tenon slack in Mortise. 7.—Effect of slack Tenon. 8.—Sharp Mullet (suitable). 9.—Easy Mullet (unsuitable). 10.—Parallel Panel (unsuitable). 11.—Final putting together. 12.—Frieze Muntin. 13.—Dado Muntin. 14.—Section of Panelled Corner. 15.—Vertical Section of Fig. 1 through Muntins. 16.—Section through Panels of Fig. 1. 17.—Stile mortised and grooved. 18.—Second Rail, mortised and tenoned. 19.—Bottom Rail, mortised and tenoned.

the same through the muntins will be as Fig. 15. But, as we stated before, the whole side will be too unwieldy to handle; therefore it must be so made that it can be taken apart and put together in the actual position.

This, in the present case, will be best managed by

Fig. 18 is the second rail from the bottom, also tenoned and mortised as required. The next to the top will be the same, but the other way up of course, and (these rails being less in width) a single tenon only will be wanted. In each case the rails are shown with the groove unmade; in practice

the grooves should be made after the tenons are sawn in, but before the shoulders are cut.

Fig. 17 shows the right hand stile. The groove is not made, but the mortises are ready to receive the tenons. The groove to receive the stile of the panelling at right angles is also shown in this figure, so that the complete corner will be as Fig. 14.

The top and bottom muntins are shown in Figs. 12 and 13; the intermediate muntins will be the same as the latter except in length. The panel grooves are not shown here.

The stiles should be kept somewhat short of the height of the room, but should run up and down as shown in Fig. 1 beyond the rails. The latter will give good fixing for plinth and cornice, while the former will allow the whole side, when together, to be adjusted and blocked into the exact position required without having to do any cutting, which is very awkward with a large sheet such as this would be.

Fitting Together.

As shown in Figs. 1, 2 and 3, the various parts of the panelling are held together with pins, and to ensure tight joints it is best to draw-bore the holes to receive the pins—that is, the hole is first bored through the mortise, the tenon inserted, and the hole marked on it, then withdrawn and the hole bored nearer the shoulder than the actual position, the result being that the pin when driven in pulls the joint top tight and close. For the draw-boring to be successful, discretion must be used as to how much draught is allowed. Fig. 4 shows what will be a good tight joint, but if more is allowed (as Fig. 5), the pin will not enter properly; it will split, and push the joint off rather than pull it up. As the intermediate muntins and the stiles have to be placed in position and cleaned off level at the joints in the shop, then taken apart, it follows that the mortises and tenons must be good fitting ones. Thus, if the mortise is made so that the tenon is slack, as in Fig. 6, and the joint is cleaned off while in the position shown, the final fixing may bring it as Fig. 7; more cleaning off will be required, while every subsequent tap with the hammer will alter it again. The panels should in all cases be mulleted to enable them to enter the groove easily. It is at best a somewhat difficult job to put the middle part together, and it will be made doubly difficult if the panels are parallel as Fig. 10, or even if as Fig. 9; but, if bevelled off sharply as Fig. 8, they will enter easily, and will be just as tight a fit when in position as though done otherwise.

The panelling, when put together finally, should be done in an upright position, placing the muntins into the dado one at the time, pinning them at once, and inserting the panels after each muntin. Fig. 11 shows the end of the first part ready for the insertion of the last panel.

After the whole of the muntins and panels are fixed to the dado the frieze can be lifted on, driven home and pinned; finally the stile will be pinned on. There will undoubtedly be some slight unevenness at the joints at the second time of putting together, but if they have been done care-

fully according to instructions there will be nothing more than can be put right with the scraper.

Fixing to Wall.

The actual fixing of the panelling to the wall is best done with screws into plugs driven in for the purpose. The best way to do this is to bore a half inch hole at intervals of say two feet in the length of each rail, alternating them from near the top and bottom edge. From these holes continue ordinary screw holes to take say, number ten screws. Place the panelling in position as it has to be fixed, and with a punch mark the wall through each hole.

At each mark on the wall drill a hole 2 ins. deep and insert a plug; then replace the panelling and fix with screws. When all is finished, fill in over the screw heads with the same kind of wood as the panelling, matching the grain as near as possible; they will be scarcely seen, while at the same time they can be found if the panelling has to be removed.

An Adjustable Music Rest.

AT the recent Uxbridge Arts and Crafts Exhibition a useful adjustable music rest for pianos was exhibited by Mr. George Shipway, of Hayes. The arrangement, which Mr. Shipway has patented, permits of the rest being raised about four or five inches so that the music is at a height to suit the vocalist who is playing his or her own accompaniment.

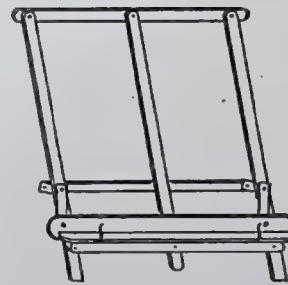


FIG. 1

MUSIC REST IN LOWER POSITION.

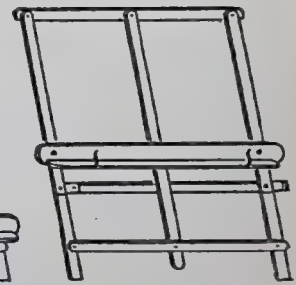


FIG. 2

MUSIC REST RAISED.

The rest, instead of being fixed to the rack in the usual way, is pivotted on two brass hinges. Each hinge consists of a long and a short arm, riveted together at right angles, the rivet pin passing through a socket in the arm of the wood rack. To the ends of the longer brass arms, which are in front, the rest is adjusted. To the ends of the shorter arms behind, a wood bar parallel to the rest is adjusted. The arrangement is simple, but very effective and useful. By parallel motion the rest is raised from the position of Fig. 1 to the position of Fig. 2. The advantages of the higher position are useful when a small music book, such as a hymn book, is being played from, and when it is necessary to have the ordinary music sheet raised to a suitable height for singing. We are indebted to the patentee for the particulars from which the above illustrations have been taken.

NURSERY FURNITURE.

2.—A Wooden Canopy Cradle.

ALTHOUGH not so frequently seen nowadays, the wooden cradle of the old type with canopy top is a picturesque piece of furniture. The articles described in this series are intended to be made in oak, unpolished, but of

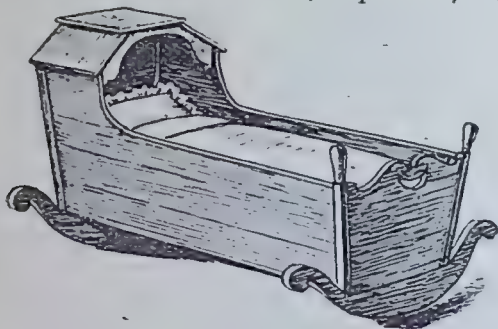


FIG. 1.—A WOOD CRADLE.

course a cradle such as that sketched might be finished in white enamel, whilst antique brown oak would be a colour that many would naturally prefer. Dimensions can be from 3 ft. to 3 ft. 3 ins. long by 18 ins. wide. The height will vary as to whether the cradle is built with or without a canopy, but will not exceed 2 ft. 6 ins. over all.

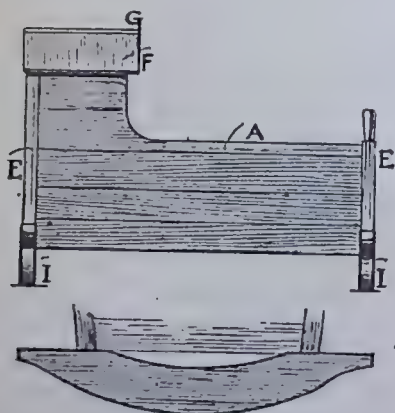


FIG. 2.—SIDE ELEVATION WITH ALTERNATIVE SKETCH FOR -ROCKER.

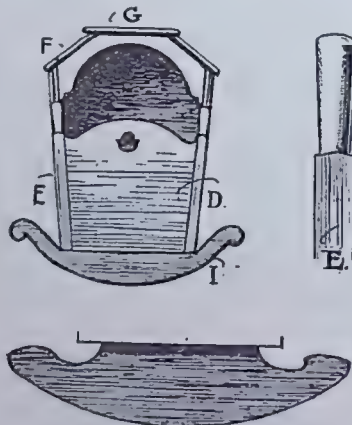


FIG. 3.—ELEVATION SHOWING CANOPY; ALSO ENLARGED DETAILS.

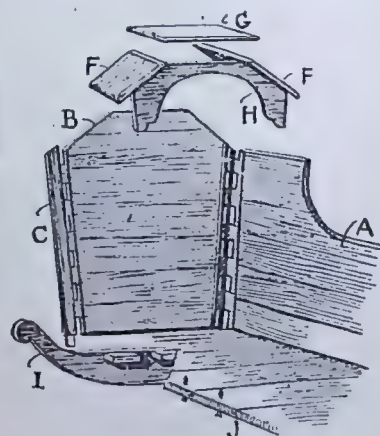


FIG. 4.—DETAILS, SHOWING METHOD OF CONSTRUCTION.

The Various Parts.

In getting out the stuff for Fig. 1, the sides (A, Fig. 2) will require neatly jointing up, using 4 in. boards, tongued together. The lower boards of each side can be rebated to receive the bottom. Taking the length over all as 3 ft., the sides will finish just short of this, to be tenoned into the posts as in Fig. 4; or they may be dowelled in if preferred. The net height of the sides can be 14 ins. at the foot end and at the head may rise an additional

8 or 10 ins. for the fitting of the top, the width being 11 ins. full, including joints.

The head end (B) may be 27 ins. high, canted at top to receive the pieces F. The edges taper about 1½ in. at each side, and can be tenoned or dowelled to the posts (C). For the latter two 2 ft. lengths will serve. These are cut at top in line with the cant of the head end, grooved, and mortised (or holed) for sides to enter, and also cut at the lower end with a tenon to enter well home into the rocker. The foot end (D) may be shaped up as in Fig. 1, or alternately as Fig. 3 (with or without a fretted opening as sketched). The end posts (E) can be got out from pieces 1½ by 1½ by 1 ft. 9 ins. long, fitted as for the head end, but with the upper 4 ins. rounded away to form a convenient handle for steadying the cot.

The canopy heading will not present much difficulty. Two pieces (F), 8 ins. by 12 ins. wide, will serve for the slopes, the side and lower edges being rounded off and the upper edge bevelled away flush with the top of arch. The flat top (B) will require a piece 12 ins. by 12 ins., cut to overlap slightly, and with all edges rounded. The arch (H) may be cut from a piece 1 ft. 6 ins. by 8 ins., and should be grooved into the sides, the sloping and flat parts of the top being glue-blocked to end and each arch, and screwed to the sides aslant from inside.

With regard to the rockers (I), these may be cut to shape out of 1½ in. stuff, several outlines being

suggested. That shown in Fig. 1 looks well when finished, but the scrolls should not curve up over 5 ins. The length should be about 2 ft., and two pieces 6 ins. wide may be allowed. The bottom can be of ¾ in. stuff, grooved and tongued together, to be screwed from below to cot framing. It will also get a bearing on the rockers to which it can be glue-blocked. The setting of the angles of sides and canopy can easily be got by the use of a bevel.

An Alternative Design.

The alternative cot (Fig. 5) varies considerably in construction, and would have a more workmanlike effect. For this two stiles (K) can be cut 2 ft. 2 ins. long by 2½ ins. full by ¾ in. or ⅞ in. thick, mortised or holed for tenons or dowels on rails, M, N and O. The uprights (L) can be cut 13 ins. long, including tenon on lower end, and will require notching to receive the arch or apron piece (U) and mortising or holing for the top rail (M) which should be shaped from a piece 9 ins. by 3 ins. by ¾ in. The rails N and O finish not less than 2½ ins. wide, and can be cut 3 ft. long, which will allow a trifle for paring to fit. The panels (P) can be got from pieces 10½ ins. wide by 1 ft. 4 ins. long, of ⅝ in. thickness, grooved into the framing; or this can be rebated for bevelled panels of ½ in. stuff, to be beaded in from behind. The foot end could have a similar panel, and the head end two panels (Q), the sides of the canopy being also panelled.

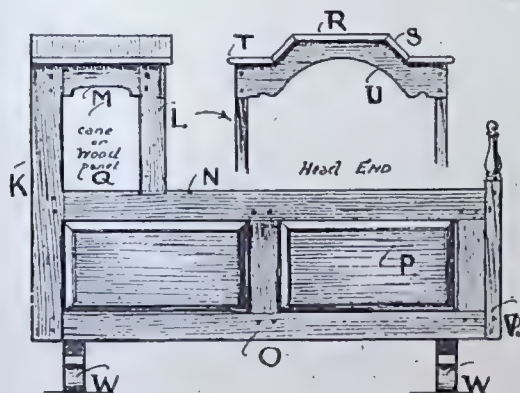


FIG. 5.—ALTERNATIVE DESIGN FOR CRADLE, WITH PANELLED SIDES, AND FINISHED SQUARE INSTEAD OF TAPERED.

The rails for head end will take three pieces 1 ft. 6 ins. long, the top one being 5 ins. wide and the others 2½ ins. wide, each to keep in line with the sides. The stiles can be tenoned into the rails and pinned, and rails dovetailed into the edges of uprights (K) and screwed. The posts (V), 1 ft. 7 ins. by 1½ in. by 1½ in., are shown with turned finials and are mortised for rails and also rebated between for the edges of stiles to enter. For the canopy top one piece (R), 9 ins. by 12 ins. by ½ in., will be required; also two pieces (S), 2½ ins. by 12 ins. by ½ in., and the pieces (T), 5 ins. by 12 ins. by ½ in. These are mitred up as indicated, and have the edges rounded. They finish flush at back, but the pieces T project ½ in. over sides and look best if allowed to project a trifle more over the front arch (U). This arch can be cut from a piece 6 ins. wide by 1 ft. 6 ins. long, and should be a full ½ in. thick. It is let into and pinned to the edges of the canopy upright, and can be glue-blocked to the top pieces, the blocks being in all cases cut with the grain to

agree with the parts to which they are glued. The rockers (W) are set under the cot about 4 ins. and either of the enlarged shapes (Figs. 2 and 3) would be in good keeping with the general effect of the cradle.

LIST OF CUTTING PARTS.

			Long.	Wide.	Thick.
A	2 sides	..	3'0"	1'8"	1"
B	1 head end	..	1'6"	2'6"	1"
C	2 posts	..	2'0"	1½"	1"
D	1 foot end	..	1'6"	1'2"	1"
E	2 posts	..	1'9"	1½"	1"
F	canopy, 2 pieces	..	8"	1'0"	1" or 1½"
G	canopy, 1 piece	..	1'0"	1'0"	1"
H	1 arch	..	1'6"	8"	1"
I	2 rockers	..	2'0"	6"	1"
J	1 bottom	..	1'2"	3'0"	1"
Fig. 5, alternative.					
K	2 stiles	..	2'2"	2½"	1" or 1½"
L	2 stiles	..	1'1"	1½"	1" or 1½"
M	4 short stiles	..	1'0"	2½"	1"
N	2 (canopy) head rails	..	9"	2½"	1"
O	2 rails	..	3' to 3'3"	2½"	1"
P	2 rails	..	3' to 3'3"	2½"	1"
Q	4 panels	..	1'4"	10½"	1" or 1½"
	2 head panels	..	10"	8"	1" or 1½"
	or these may be caned.				
Head end if to be panelled:—					
	1 top rail	..	1'6"	5"	1"
	1 centre rail	..	1'6"	2½"	1"
	1 bottom rail	..	1'6"	2½"	1"
	2 stiles	..	2'0"	2½"	1" or 1½"
	1 top panel	..	1'2"	10½"	1" or 1½"
	1 lower panel	..	1'2"	2½"	1" or 1½"
Canopy top.					
R	1 piece	..	9"	1'0"	1"
S	2 pieces	..	3"	1'0"	1"
T	2 pieces	..	5"	1'0"	1"
U	1 arch	..	1'6"	6"	1"
Foot End.					
V	2 posts	..	1'7"	1½"	1"
	2 stiles	..	1'0"	2½"	1"
	2 rails	..	1'6"	2½"	1"
	1 panel	..	1'1"	10½"	1" or 1½"
	1 bottom	..	1'6"	3' or 3'3"	1"
W	2 rockers	..	2'0"	6"	1"

The above list of dimensions will be found of assistance in setting out either of the cradles sketched. All lengths are full to allow of joints and cutting to a fit, but all widths and thicknesses given are net finished sizes.

Mezzotint Engraving.

In pure mezzotint engraving there is no biting, and no lines are used. The plate is first prepared or grounded by rocking over it the grounding tool or cradle until the burr thus produced prints a rich full black. The subject is then wrought by scraping away the burr in the lighter tones and finally polishing the plate quite smooth in the high lights. In some mezzotints etched lines are used to emphasise the forms (as in Turner's "Liber Studiorum"), and in others a texture is obtained by stipple etching or partial rocking with a coarser tool, under the full mezzotint ground. It is often also mixed with machine ruling and other work, and is then called "mixed mezzotint."

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Dallers' Tours offer, for the sum of £5 5s., a week's holiday in Paris, where the Louvre, Versailles, and all the other wonders that Paris can offer may be seen to full advantage. Write (enclosing a penny stamp) for *Booklet No. 19*, to Dallers' Tours, Sardinia House, Kingsway, London, W.C.

SIMPLE JEWELLERY.

Mounting Beads.

BEADS have always been favourite ornaments alike with the ancient civilisations, such as the Egyptians and the Chinese, and the savage races, such as the Bushmen and the Kaffirs, and delightful ornaments can be made by stringing them in various patterns.

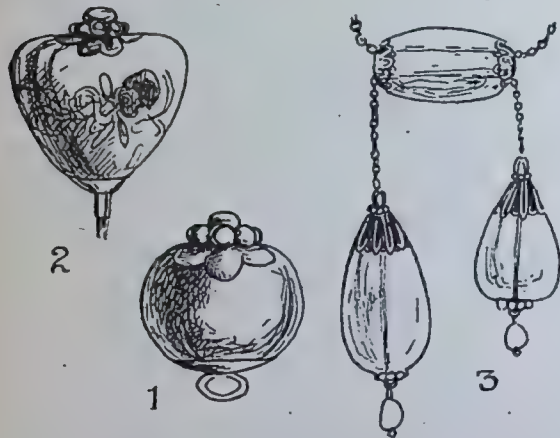


FIG. 1.—LAPIS BUTTON. FIG. 2.—VENETIAN BEAD MOUNTED AS HATPIN. FIG. 3.—NECK ORNAMENT WITH ROSE CRYSTAL BEADS AND BAROQUE PEARLS.

But thus used few articles can be made beyond chains and necklaces. If, however, the art of soldering has been mastered, and the practice of uniting wire and grains of silver comes fairly easy, a host of charming pieces of jewellery may be made with the minimum of expense and trouble.

To Make Bell-Shaped Buttons.

For instance, take the set of buttons of the ball shape now so much used. To make them we shall require half-a-dozen round beads; lapis lazuli if we can afford them, marbled glass if we cannot. Curl up six small circles of beaded wire and solder a fairly large grain in the middle. Take some thin silver wire, of a ribbon-like section, and cut six pieces, each long enough to go twice through the bead and about $\frac{1}{4}$ in. over. Solder these on to rings. Bend them together and solder the rosette on to the end where they were joined. It is easiest to do this by half burying the rosette in the asbestos or charcoal, so that the shank lying on the surface naturally comes just to the middle. Cut some tiny circles of thin silver, either with a ring punch or with the shears, and file them into flower shapes. Cut some others, but leave these plain. Drill small holes just large enough to take the wire.

To mount the beads, pass the shank through a flower shape, then through the bead, and lastly through a plain circle. Insert a sharp pointed tool in the loop at the bottom of the shank, press it open, and the button is complete.

To Make Hatpins.

To make a hatpin, take a larger and more important looking bead (some of the elaborate Venetian beads look well mounted thus) and proceed as above, substituting a piece of thin silver tubing for the wire shank. Before passing it through the hole insert a little plaster-of-paris mixed with seccotine into the bead hole and into the tube. Quickly pass the tube through the bead and push a steel or German silver hatpin into the tube. When the cement is set, the edges of the tube can be filed off neatly.

Other Ornaments.

Attractive neck ornaments may be made by mounting two different sized pear-shaped beads of amethyst or malachite in the way described for buttons, and attaching them to a length of silver chain, threading this through a flat doubly-pierced stone.

Recently the writer saw a beautiful muff chain which, on close inspection, proved to be made of turned wooden beads of an oblong shape mounted in silver. They were made of boxwood, dyed a bright peacock blue, and finished with a dull wax polish. Each bead had a cup-shaped mount at both ends, formed by cutting discs of silver. These were perforated, the edges filed, and were then domed to fit the beads, a loop of flat wire being passed through them and connecting them with the rest of the chain. The ends of the loop were well spread out to prevent the mounts moving up and down.

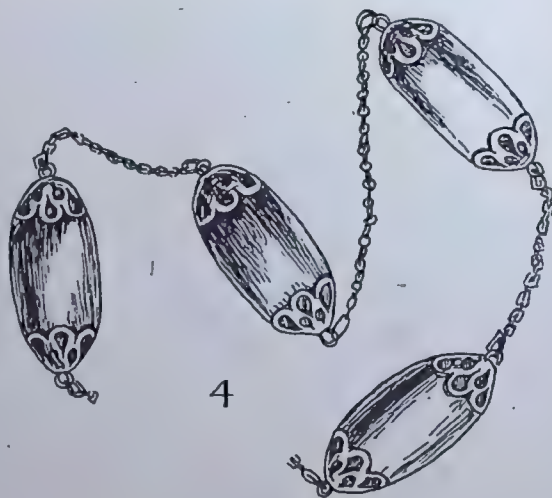


FIG. 4.—BEADS OF STAINED BOXWOOD ON A MUFF CHAIN.

Earrings of beads on chains invariably look well. The wires or studs can be bought from metal dealers ready for use. It is quite possible to make these, but it is better to have them of good gold, and waste is so easy for those not used to the precious metal that ready-made ones are more economical.

SMALL WORK TABLE.

A Neat and Useful Article of Furniture for Sitting Room or Bedroom.

A NEAT and useful lady's work table may be made at a comparatively small cost on the lines suggested in our illustrations here. If required for standing at a window it may be carried out with the little touches of ornamentation indicated. If, on the other hand, it is to be placed in some recess where its details will not be seen, it may be left plain—that is, the brackets below the drawers, the necking on the legs and the flutes on the pilasters may be omitted.



FIG. 1.—A USEFUL WORK TABLE.
SIZE, 30 INS. HIGH; 24 INS. BY 16 INS. OVER TOP

Such a table will be found very useful for a lady's household needlework. If desired, it would serve equally well as a writing table. The height is 2 ft. 6 ins., but this could without much disadvantage be reduced to 2 ft. 5 ins. The carcase measurement is 18 ins. by 15 ins. At front and back the top has a projection of $\frac{1}{2}$ in., at each end, however, it overlaps the matter of

3 ins., thus bringing the size of the top to 2 ft. by 16 ins. In this way a serviceable top space is provided without making the table heavy otherwise. The four drawers are of a useful size for little odds-and-ends, while the railed shelf below will hold a good sized work basket.

With regard to wood, dark walnut or mahogany may be used if the table is carried out as shown in Fig. 1. A neat Sheraton table might be made by using mahogany, and panelling the top, drawer fronts, pilasters, brackets and legs with inlaid lines. If the table is to be made plain, oak is more suitable than walnut or mahogany; or, if a quite cheap article were wanted, basswood might be taken and afterwards stained and polished. Readers who are accustomed to cabinet work will have no difficulty in deciding on what will best meet their requirements.

The Construction.

The top, 2 ft. by 1 ft. 4 ins., is simply moulded as shown, and may finish $\frac{1}{2}$ in. (or $\frac{3}{8}$ in.) thick. Shallow mortises are worked and cut on the underside to take the short tenons of the legs, and the top should also be holed for dowelling to the ends and back—say two dowels in ends and three in back. The top might easily be made an inch longer each way (that is, 2 ft. 1 in. by 1 ft. 5 ins.), thus giving it an overlap of 1 in. at back and front and $3\frac{1}{2}$ ins. at each end. So far as appearance is concerned, this might be an improvement.

The legs are 2 ft. $5\frac{1}{2}$ ins. long, but an extra $\frac{1}{4}$ in. must be allowed for short tenons to enter the top. They should finish 1 in. square. If a plain table, without fluting or necking, is made, the legs had better taper the whole way down to $\frac{5}{8}$ in. square at the floor. If made as shown they remain square for the top $11\frac{1}{2}$ ins. and from this point taper to $\frac{5}{8}$ in., the taper being the same on all four sides. The front legs are mortised to take the front rails and the tenons of the ends. The back legs are mortised to take the tenons of back and of ends, and all four legs are mortised to take the rails of lower shelf.

The fluting on the pilaster portion of the legs is optional, but will greatly improve the appearance if neatly done. The $\frac{1}{2}$ in. necking at the foot of the pilasters is mitred and glued on. The lower necking, $4\frac{1}{2}$ ins. from the floor, may be only $\frac{3}{8}$ in. wide. This lower necking might easily be omitted if desired.

The back and the ends show $8\frac{1}{2}$ ins. deep and may be $\frac{1}{2}$ in. thick. All are tenoned to enter the legs and should also have dowels to secure the top. The lower edges may in each case be rebated to take the bottom of the drawer portion. Back and ends should be set in 3-16 in. or $\frac{1}{4}$ in. from face of legs.

The top front rail and the rail between the drawers may be $2\frac{1}{2}$ ins. wide by $\frac{1}{2}$ in. thick, tenoned to the legs. The upper rail affords a bearing for screwing the top from below. The spaces for the drawers are $3\frac{1}{2}$ ins. and $3\frac{1}{2}$ ins. respectively, and the dividing partitions are $\frac{1}{2}$ in.

thick. The side bearing rails for the drawers are fixed in the usual way.

The bottom of the drawer portion may be solid ($\frac{1}{2}$ in. thick), or a lower rail similar to the two

$\frac{1}{2}$ in. fronts, $\frac{3}{8}$ in. sides, $\frac{1}{4}$ in. backs and 3-16 in. bottoms. The front may have a raised panel as Fig. 8, or a slip mould may be mitred and planted on as Fig. 9. Locks ought not to be necessary

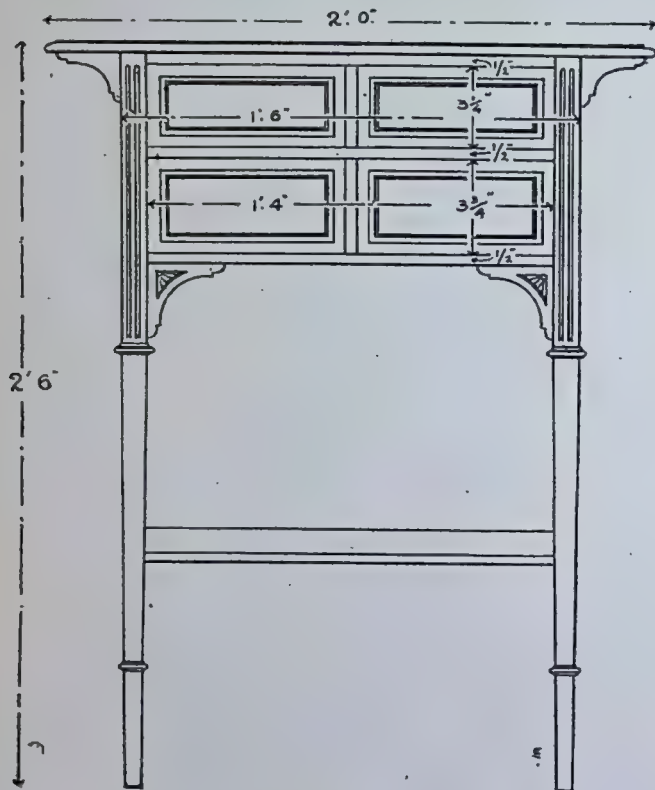


FIG. 2.—DIMENSIONED FRONT VIEW OF TABLE.

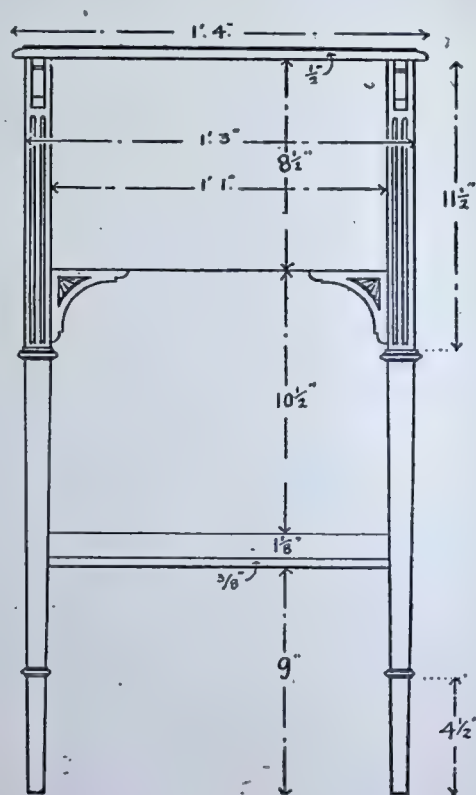


FIG. 3.—DIMENSIONED SIDE VIEW.

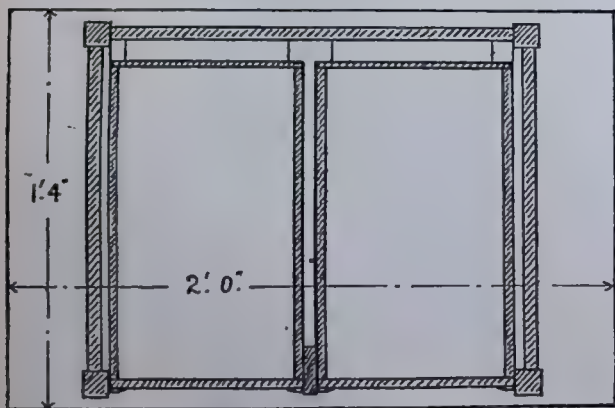
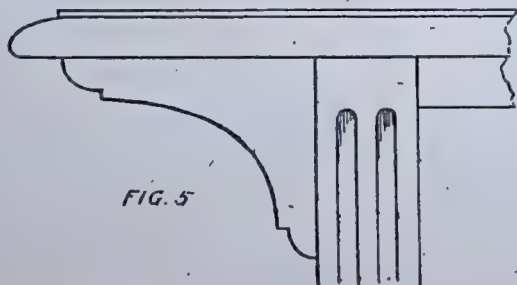


FIG. 4.—SECTIONAL PLAN, SHOWING LINE OF TOP.

upper ones may be used and a false bottom fixed in. If a solid shelf is used it must be notched to the legs in the usual way. The four drawers are each $7\frac{3}{4}$ ins. wide, the lower ones being $3\frac{3}{4}$ ins. deep and the upper ones $3\frac{1}{4}$ ins. These may have



DETAIL OF TOP, PILASTER AND TOP BRACKET.

for such small drawers, but these might be added if required. Small drop handles look better than wood knobs. Some workers may prefer to put in one long drawer below instead of two short ones; this, however, is a matter of personal convenience. Drawer stops should be fixed so that the drawer fronts are set in about $\frac{1}{8}$ in. from face of pilasters and rails.

The brackets below the top are $2\frac{1}{2}$ ins. by 2 ins., finishing $\frac{1}{2}$ in. thick. They may be tenoned to

the pilasters and dowelled to the top. If the end pilasters are fluted the fluting will of course start about $\frac{1}{2}$ in. below the spring of the brackets.

The lower brackets are 3 ins. by 3 ins., shaped as indicated, and $\frac{1}{2}$ in. thick. They may be left plain, or may with advantage be carved with a sunk Sheraton-style fan. They are set in about 3-16 in. from face of pilasters, so that they will be in line with the drawer fronts, ends and back respectively. They are tenoned to legs, and either dowelled or merely glued to the portions above.

The lower shelf stands 9 ins. from the floor and may finish $\frac{3}{4}$ in. thick. It is cut away at the corners to fit the legs, and should stand in about $\frac{1}{8}$ in. from outer face. The shelf rail may be $1\frac{1}{8}$ in. or $1\frac{1}{4}$ in. deep and $\frac{1}{2}$ in. thick. It is tenoned to legs (being centred), and the shelf is screwed to it from below.

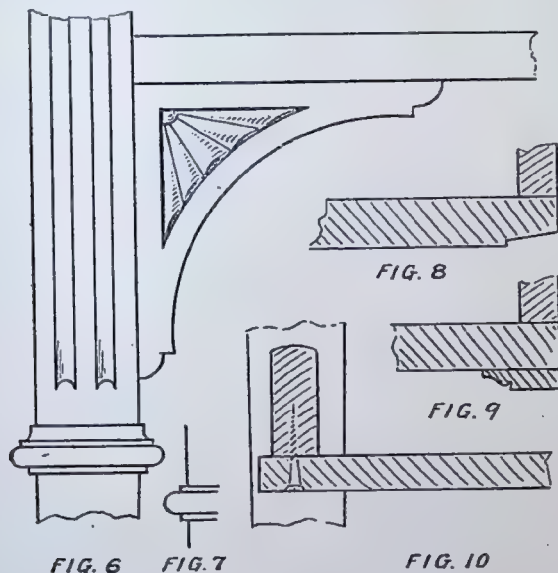


FIG. 6.—DETAIL OF PILASTER, LOWER BRACKET AND NECKING. FIG. 7.—LOWER NECKING. FIGS. 8 AND 9.—SECTIONS FOR DRAWERS. FIG. 10.—SECTION OF SHELF AND RAIL.

If a plain table is made there will be no difference as regards construction. It may be, however, that some workers will prefer the lower shelf without a rail. In this case the shelf will have to be notched to the legs. If used for writing, the table would be inconvenient with the shelf as shown, but as adequate rigidity is secured by means of the drawer rails the shelf could be omitted. It will be borne in mind, however, that the height from floor to underside of lower drawer rail is only about 21 ins. (rather low for comfort in writing). Thus, if it is desired to make a writing table on similar lines it will be better to omit the two lower drawers and have a back rail and two end rails about 9 ins. from the floor, these being tenoned to the legs.

Figs. 2 and 3 show the front and end elevations of table. A sectional plan is given at Fig. 4, and the details suggested in the other illustrations may be helpful in setting out the work.

New System of Wood Preservation.

A new method of wood preservation has been used in Hungary and seems to meet the requirements of impregnating the inner layers without wasting too much of the impregnating fluid. It is well known that the part of a pole above ground is less liable to the influences of moisture than the part in the ground. Especially at that section where the pole approaches the surface, the decaying process exerts its greatest force and fungi growths find this the best place to start their attack. The idea was to impregnate the section which is in the ground and leave the upper section without any impregnating liquid, or else use but very little.

The Hungarian Process.

The new Hungarian process uses some of the creosoting oil on the section above ground and a greater quantity on the rest of the pole, without, however, materially increasing the cost by using too much oil. All that is required for preservation is to inject enough of the creosote into the pole to kill off any fungi germs that might try to enter or have entered from the outside. For this purpose the pole is perforated at the lower end for a distance of about 10 feet so that the creosote can penetrate deeper into the pole than would be possible otherwise. A special machine is used to drive sharp and strong needles of about one inch length into the poles. Through this treatment the wood fibre is not torn apart, but the wood is merely opened to admit the creosote oil deeper into the pores. Much care has been taken to arrange the needles so as to allow for the susceptibility of the different sections of the wood to the saturating liquid.

Saturating the Wood.

It is easiest to saturate the wood in an axial direction, i.e., in the direction taken by the sap in the living tree. In a radial direction the wood offers a much greater resistance to saturation. The needles are set in such a way that one needle-point pierces the trunk every eight inches in an axial direction, while in the radial direction, i.e., in the circumference of the pole, there is one needle for every half inch. As a result a complete circular section of rings is saturated and impregnated, ranging in thickness from one to two inches. The poles are first perforated with the machine, and then impregnated, first heating the wood for one hour, then placing it in a vacuum for a like time, and finally impregnating it with tar oil. It was at first feared that the perforating might have a bad influence on the strength of the poles. Tests made with perforated and unperforated poles showed that these fears were groundless. Fears were also expressed that the creosote oil might flow out of the wood as easily as it had entered, but this was also disproved. The holes are gradually closed up by the crystallised naphthalene which forms, and by the hardened creosote oil itself. Moreover, there is a constant drying process going on in the wood, which absorbs more of the creosote oil into the inner cells and thus retains the impregnating fluid.

CITY AND GUILDS OF LONDON INSTITUTE.

Examination for Teacher's Certificate.

Practical Woodworking—First Year.

Saturday, April 26th, 1913.—Four hours allowed for this Examination.

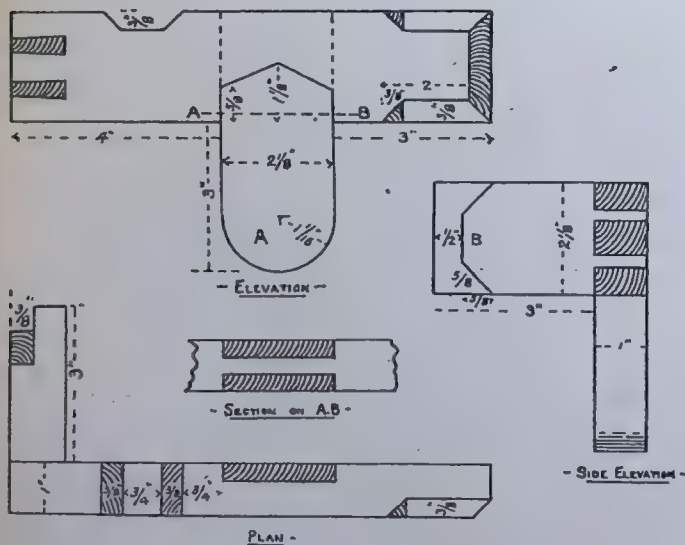
Accuracy of craftsmanship will be the chief consideration in awarding marks. No glasspaper or files allowed.

Question 1.

(1) From the piece of wood of dimensions 20 ins. by $2\frac{1}{4}$ ins. by $1\frac{1}{4}$ ins. make the exercise as shown in the drawing.

NOTE.—Dimensions are not given for the common dovetail and bridle joints; these are left to the judgment of the candidate.

The exercises at A and B are to be finished with the chisel.



WOODWORKING EXERCISE. QUESTION 1.

Drawing Examination—First Year.

The problems given and the solutions to these are illustrated on the next page.

The drawings to be neatly made in pencil and to scale, superfluous lines being rubbed out. Centre lines and sectional shading may be used where they add to the clearness of the drawing. Dimensions need not be written on the drawing.

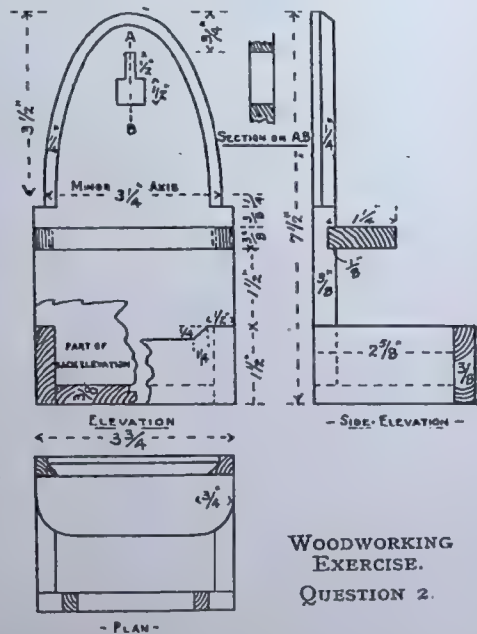
The maximum number of marks obtainable is affixed to each question. Both sides of the drawing paper may be used. Three hours allowed for this examination.

Question 1.

(1.) Geometric Model (Fig. 1.)—Draw the plan in the position given, with one side of the hexagon, making an angle of 30° with the edge of the paper. Draw a section, which is to be taken at the line BC. Draw an elevation looking in the direction of the arrow A. Scale, full size.

Question 2.

(2.) Box (Fig. 2.)—Draw and complete the two given elevations of the box when the lid is open at an angle of 30° . Draw a plan of the box and lid. Scale, half full size.



WOODWORKING
EXERCISE.
QUESTION 2.

CITY AND GUILDS OF LONDON INSTITUTE. FIRST YEAR'S EXAMINATION FOR TEACHER'S CERTIFICATE.

Question 2.

(2) From the two pieces of wood whose dimensions are 11 ins. by 4 ins. by $\frac{1}{2}$ in., and 15 ins. by $1\frac{1}{2}$ ins. by $\frac{1}{2}$ in., make and nail together, with $\frac{3}{4}$ in. brads, the model as shown in the drawing.

The upper portion of back of model is a semi-ellipse. NOTE.—Those readers who read our hints in the April issue would be well able to cope with the semi-ellipse question

Question 3.

(3.) Bridle Joint (Fig. 3.)—Draw the elevation of three pieces—P, Q and R. Give the dimensions of the long sides of the piece R. Draw a plan of the piece P alone. Make an oblique freehand sketch of the piece Q. Scale, half full size.

NOTE.—The Question refers to "Bridle Joint," but according to the elevation shown it is a mortise and tenon joint.

THE QUESTION BOX.

Illustrated Replies to Readers' Queries.

As one of the main objects of THE WOODWORKER AND ART CRAFTSMAN is to help its readers, questions of general interest dealing with any branch of handicraft will be answered on this page.

As it is impossible to reply fully in these columns to all queries received, questions on subjects within the scope of this Magazine are replied to by post under the following conditions:— (1) Questions dealing with distinct subjects should be written on different slips, on one side of the paper only, and the sender's name should be written on the back of each. (2) Questions should be accompanied, wherever possible, with fully dimensioned sketches, and correspondents are recommended to keep a copy of their Questions for reference. (3) A stamped addressed envelope (not post-card) should be enclosed. (4) Questions will be answered as early as possible after receipt, but when sketches have to be prepared, or when research has to be made, a short interval must elapse before the Reply can be forwarded. The insertion of Replies in this column cannot be guaranteed, but all Replies of general interest will be given when space permits. All Questions should be addressed to The Editor, THE WOODWORKER AND ART CRAFTSMAN, Sardinia House, Kingsway, London, W.C.

Reconstructing a Secrétaire.

[384] P. L. (Spilsby) writes:—"I have the top part of an old inlaid writing chest which I should like to complete (sketch enclosed.) Could you please give me some idea, or sketch, what the missing parts should be like? I may mention that the whole of the bottom part is missing."

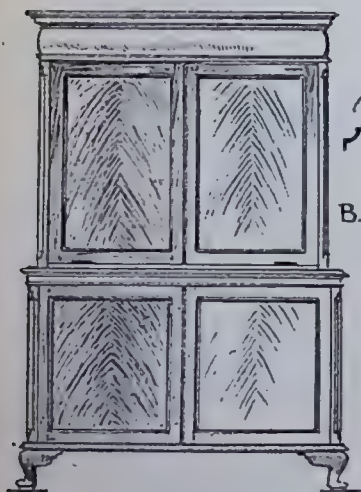


FIG. 1.

REPLY.—From the scale sketch you enclose we think the old piece you have is part of a secretaire of the type often made in the 17th and 18th centuries. There is little to mark what was the design of the missing lower portion, but in all probability it finished with a couple of cupboards, chamfered posts, and either a plain plinth or cabriole legs as shown. The upper fall front would probably be panelled to correspond, the panel head moulds being either square or shaped as at A or B (Fig. 1.) The base might, however, have consisted of five deep drawers with cock beaded fronts and shield handles of the Queen Anne type. An earlier type of secretaire similar to your own remaining part

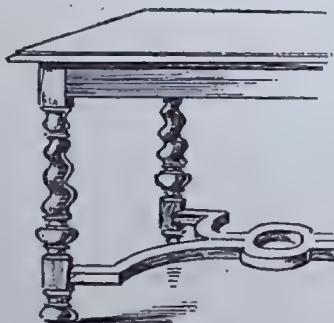


FIG. 2.

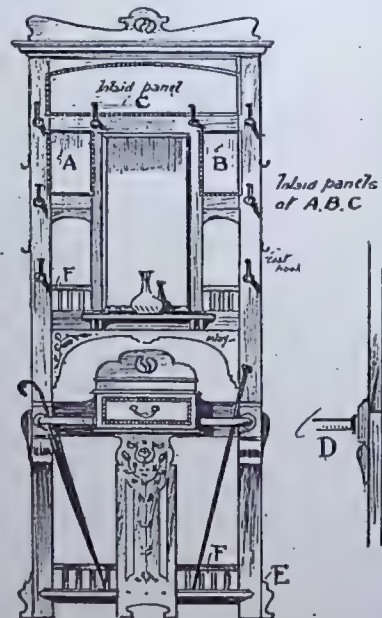
SUGGESTIONS ON THE RECONSTRUCTION OF A 17TH OR 18TH CENTURY SECRÉTAIRE (No. 384).

was supported on a table as at Fig. 2, the twisted columns being graduated and finishing on ball feet. The underframing was also often shaped to a suitable design in preference to straight rails all round, sufficient projection being allowed to form a rest for the fall front when down.

Inlaid Hall Stand.

[385] J. O'N. (Glenties) sends a scale sketch of a hall stand he is about to make, for which he intends to use inlaid panels similar to those shown in THE WOODWORKER, Vol. II., page 99.

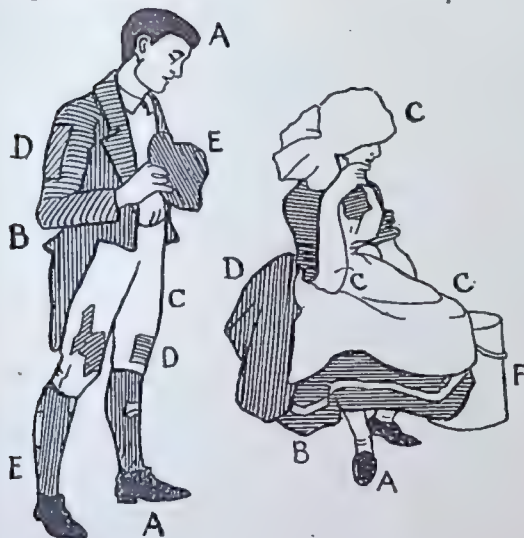
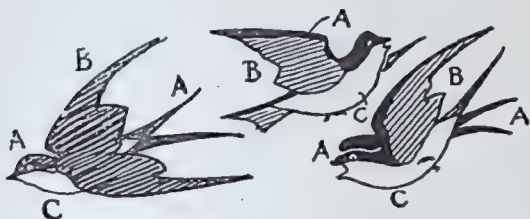
REPLY.—The pencil sketch of hall stand enclosed with your letter is very well set out, and we reproduce it with but slight alteration by way of alternative suggestions. As we follow the particulars given the stand is to be in two parts, the upper to be fixed to wall and the lower to be detachable for removal, for which purpose sunk castors might usefully be fitted. The uprights can be $1\frac{1}{2}$ in. thickness to finish $2\frac{1}{4}$ ins. wide, or they may be $2\frac{1}{2}$ ins. wide if you care to inlay with chequered banding along outer edges. As shown, the panels (A B C) you propose to inlay, using the designs for figures and birds given in Vol. II., page 99, for hanging cabinet, might be suitably emphasised by a surround of chequered banding, $\frac{3}{4}$ in. wide. A narrow shelf might also be introduced under the glass, say 4 ins. wide, if you have room for it, to be supported on small $3\frac{1}{2}$ by $1\frac{1}{2}$ brackets in pairs. The upper and lower parts can have the uprights of equal thickness, the join being masked by a couple of applied brackets (D) and the outer shapings (E) can be separ-



INLAID HALL STAND (No. 385).

ately cut and glued in position. The shapings you indicate would bear simplifying to a plain sweep under the small inlaid panels, and the lower part of these opening and also that under the drawer might be filled with a rail and square slips (F). The inlaid support under drawer might be treated as a fretted panel, with a little suitable detail of inlay after the

manner indicated, to be let into and screwed to the frame below carrying the drip-pans. The shapings immediately above drawer should work out well if carefully inlaid. Castors, if fitted, can be screwed to



INLAYS FOR HALL STAND (No. 385).

glued blocks, and we should suggest using the small brass kind as used on drawing-room tables.

You can set the chequered inlay in 3-16 in. from edge of framing if you wish, with good result, but it is not unusual to inlay up to the edge, and in the instance concerned the effect will be heightened by the more direct definition given to the panel. If the channel is well toothed or roughened and pierced holes made in the underside of inlay to afford a pocket for holding for the glue, you should not have much trouble. Allow the glue to set and the bandings to thoroughly dry before cleaning off, and care must be taken to get the air out so that no blisters form. With regard to the birds and figures which you propose to introduce we give a line reproduction of those, lettered for reference, the woods suggested being:—(A), Black or brown ebony; (B), brown oak or rosewood; (C), holly, sycamore, or grey wood; (D), Italian walnut; (E), pear; (F), sycamore, tinted and outlined black. Faces and hands can be of holly or outlined sycamore, slightly tinted. The border on skirt and the stockings can be of holly, slightly tinted.

Ebonising a Piano.

[386] H. C. (Buxton) writes:—"I should feel greatly indebted to you if you could tell me how to re-ebonise the case of a good piano. The material appears to be foreign oak, and from some cause I cannot explain the

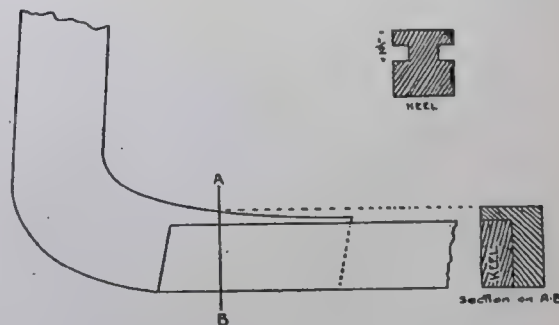
grain has risen, giving fine light streaks almost all over the body of the piano. I have tried the "dead black," commonly used for blackboards, on a small portion, afterwards French polishing, but the result is not black enough. I would prefer not to remove all the original ebonising."

REPLY.—From your description of the state of the polished surface of the piano we should suggest treating the whole of the surface instead of attempting to patch it up. The wood may be greasy, or it may have been treated with a black stain having in its composition a free salt or acid, which is likely to raise the grain. Your best plan to avoid removing the original ebonising altogether would be to smooth down the present surface with a very fine glass paper. Then give two or three coats of black polish, allowing each coat to stand 24 hours, so that it is hard. Paper down after each coat and finish with French polish. If there is any sign of grease on the surface it must be removed, as the less grease is brought in contact with polish the better for a successful surface. You could obtain metal fittings for pianos from Messrs. Oakdens, London Fields, London, N.E.

Keel of Canadian Canoe.

[387] B. H. (Hastings) writes:—"In your issue of THE WOODWORKER, July 15th, 1903, there is an article on a Canadian Canoe. The size of stem and stern posts is given as 1½ in. by 1 in., and size of keel as 1 in. by 1½ in. I cannot make this out, as one would think to make a correct halving joint they should both be the same size. Also I should like to know the distance to lower edge of groove."

REPLY.—Two methods are given in the article you refer to for jointing the stem and stern post to the keel. One shows a method where the 1½ in. stern or stern post dies away to a feather edge at the end of the splice, and this is clearly shown in the illustration. The other method is by use of the half lap joint, and of this we give you a sketch and a section on the line A B. The stern or stem post is cut away to one half



DETAIL OF CANADIAN CANOE KEEL (No. 387).

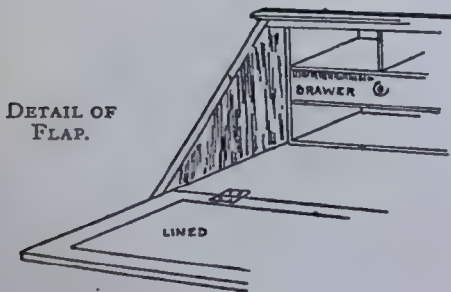
its thickness so as to receive the keel; and the width of the stem and stern post gradually dies away on to the keel. The deadwood knee (Fig. 10, page 176, July 15th, 1903) is then fitted to the back of the posts and the top of the keel, and firmly screwed in position with brass screws. Glue is not used on the joints; the parts are painted with a mixture of white lead run down in good varnish. We give you a sketch of the keel, and the distance to the lower edge of the groove is marked thereon, viz., ¼ inch.

Bureau Bookcase.

[388] H. B. (Doncaster) writes:—"I am thinking of making a bureau bookcase, and in looking up back numbers I find there is a sketch of one that I should like to make in issue of September, 1910. May I ask your advice as to a scale drawing, etc., and as to cost of wood (oak) for making same?"



SCALE DRAWING OF BUREAU BOOKCASE (No. 388).



REPLY.—We have pleasure in giving you a sketch, with sizes, for the bookcase bureau shown in our issue of September, 1910. We think that, after carefully looking over the drawing, you will have little or no trouble in making a neat and serviceable piece of furniture. The top or bookcase portion is made separately. It contains three moveable shelves, and is fixed to the lower portion by screwing it in position. We give also a sketch of a portion of the bureau, showing the inside of the fall (or flap), lined with leather or American cloth, and suitable inside fittings for the stationery are suggested. The cost of the timber would be about fifty shillings, and we should advise you to finish it by fuming and wax polishing the oak.

Coal Cabinet With Drop Door.

[389] W. H. P. (Gibraltar) writes:—"I wish to make a mahogany coal cabinet, inlaid Sheraton style, with drop door, so would be much obliged if you could give me a design and instructions. I would like a small pediment to cabinet, not too elaborate, but in true Sheraton style. All ornamental work would, of course, be inlaid. May I add that I am making a bedroom overmantel from instructions in No. 218, but find it impossible to bend inlaid banding round shaped rails. Could you give me a few hints as to how this is done?"

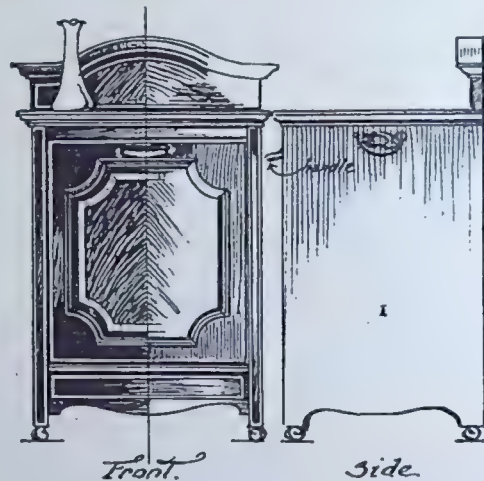


FIG. 1.—SHERATON COAL CABINET (No. 389).

REPLY.—The coal cabinet you wish to make can be worked out in two ways, and as you appear desirous of making a nice thing we offer a couple of suggestions. Fig. 1 is the dwarf type, of which front and side elevations are shown. Finished dimensions from ground to table top may be 22 ins.; width, 15 ins. on carcass; and depth, back to front over ends, 14 ins.; the top will finish 16½ ins. wide by 14½ ins. deep, moulded front and sides. Stuff to finish ¾ in. thick may be used throughout for the carcass, either solid or pine faced up with ¾ in. stuff. The fall front had best be in one piece of solid mahogany, to be veneered both sides, the mould being glued and pinned into position for the panel effect. The back should be panelled up with stiles and rails 1½ in. wide by ½ in. thick, with ¾ in. or 1 in. panels. The upper back rail or pediment with moulded capping should spring to 3 ins. high in centre, to be lined or cross banded to match the fall front. A handle is indicated on the latter as a grip for tilting forward and replacing, and a couple of handles fitted at sides under table top will assist portability in addition to the castors, which can be fitted to blocks glued under bottom. The coal container is dovetailed to the front and back; it should be zinc lined, space being left behind the zinc lining to receive the shovel. The front may be hinged to the carcass at lower end, so that it tilts forward and stops against the upper rail under top by means of the projecting container back. The usual way is to pivot the container, a pin and flange fitting being obtainable for the purpose. You can easily find the position for fitting this by making an elevation model of the parts to scale in cardboard, with a toilet pin

as pivot, but if you have access to a cabinet of the kind it will assist you considerably. Fig. 2, it will be seen, is an improvement, the upper part being useful for the placing of books or oddments in use when seated at the fire. Dimensions of lower part remain the same, except that the sides are about

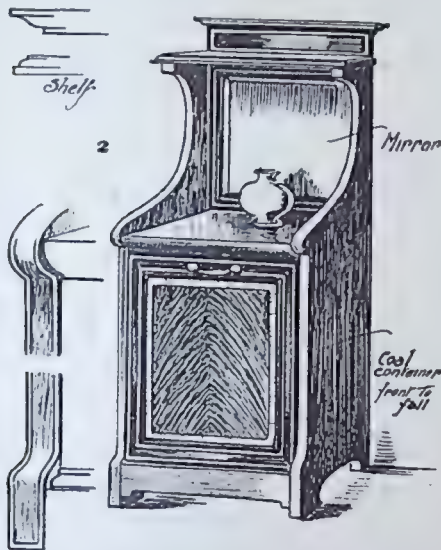


FIG. 2.—ALTERNATIVE DESIGN FOR COAL CABINET (No. 389).

33 ins. high, with the upper 11 ins. shaped back as shown. The face edges will look well with inlaid box lines. The width of upper shelf can be 5 to 6 ins. and the rail at back 3 ins. high, these parts and also table top being improved by an inlaid banding. The bevelled mirror is optional, but will be a pleasing addition.

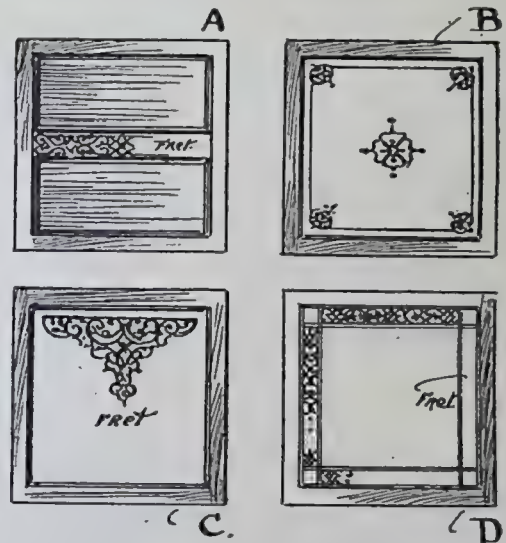
With regard to a further question, if the shaped inlay you refer to is to be cut with the grain you can (with care) cut it out of the veneer with a suitable knife. If, however, it has to be cross-banded it would be necessary to cut the inlay in sections of several inches. Repeat corners are cut together in packets and repeat sections of curve may be done in the same way. The space to receive the inlay is routed out and the black lines outside will be glued and run in with the hammer.

Overlay Panels for Sideboard.

[390] G. A. M. (Alness) writes:—"I am making the sideboard described in THE WOODWORKER of October, 1912, using home-grown oak. For the panels I wish to have overlays, and perhaps you could help me with a design. Is Maunders' "stopping" suitable for filling up bad joints? And what is the best finish for the sideboard?"

REPLY.—We should advise you to fumigate your oak and wax polish it, or simply oil it. With regard to the filling for your panels, you will find in June issue, 1912, page 139, a design for iron grille which should be serviceable to you for adaptation. On page 160 of the same issue there is a sketch of an inlaid panel, the motif of which should help you to work out a leaf and ribbon pattern for applying to upper centre part of

panel. As you are altering your panels we give four rough suggestions, any one of which may be worked out with good effect. A is fitted with two moulded panels and the rail between treated with an overlaid fret. B has an applied panel with fret-opened corners and centre. C has an applied panel fret-cut at top.



SUGGESTIONS FOR OVERLAID PANELS FOR SIDEBOARD (No. 390).

D would work out very effectively with an applied panel in centre, leaving a margin between it and the panel mould for the laying of lengths of fret in the manner indicated. The stopping you mention is very good, or you can make one yourself by mixing hot glue and water with fine plaster-of-paris.

To Machine Workers.

Don't try to operate a machine you do not understand; get acquainted in a harmless way. A guard is placed on a machine solely for your protection. Don't operate such machines without the guard in place. Safety devices are of little value unless maintained and used as they were intended.

Porch Columns.

A porch column is really one of the most difficult things in woodwork, because of the exposure to the weather. Not only will staves in built-up work shrink and show cracks, but solid bored columns will show season cracks too. In this work nothing but thoroughly seasoned wood should be used.

Line Engraving.

In pure line engraving all the work is cut with a graver and no etching is used. Much engraving is, however, partly bitten and partly cut. With a properly-sharpened graver there is scarcely any burr made in cutting, as in the case of dry-point the copper being removed in a clean shaving. The graver being pushed with some force by the palm of the hand, a severe character is always given to the line as opposed to the freedom of an etched line.

MAKING A GARDEN FLOWER VASE AND PEDESTAL.

As a garden adornment the vase and pedestal stand pre-eminent, and the following easy and economical method of making the same should appeal to our readers. Fig. 1 shows the vase and pedestal which, for the purposes of this article, we may presume is to be made. The precise shape is optional, the only point to remember being that there should be no excessive overlap, as will be readily understood from the method of making.

The Vase.

Referring to Fig. 2, which shows the vase in section, three boards cut to the shapes A, B, C, are required, the thickness being about $\frac{1}{2}$ in. to 1 in., the edge bevelled as in Fig. 3.

At a convenient position in the garden project a piece of round iron, gas barrelling, or round piece of wood (a broom stick would do excellently), making sure that it is perfectly rigid and not likely to work loose. Fix the board B on this spindle so that it will revolve easily

Revolve the board so that it is equally distributed and then allow to thoroughly dry.

After drying has taken place, remove this portion and fix to spindle the board C. Strike up the base by the method as explained with regard to board A. When both portions are thoroughly dried, join together by the spigot which should be about $\frac{1}{4}$ in. smaller in diameter than the hole into which it fits. This allows for a coating of cement to join the two pieces together.

The spigot sizes and the method of forming spigot can be judged from Fig. 2.

The Pedestal.

For the pedestal foundation a box open at one end and of proportionate size will be required. Any box of this description is easily obtainable.

There are also required two guide strips with clamp pieces, as shown in Fig. 6, the distance between the clamps being the length of box. These should be fixed so that they hold tightly to this length. Then we must have a piece of wood shaped to the panel recess and its thickness also. The moulding block is shown in Fig. 7, this being about 4 or 5 ins. at its shortest length, the ends mitred as shown. The latter can be easily made by using a piece of builder's fancy moulding

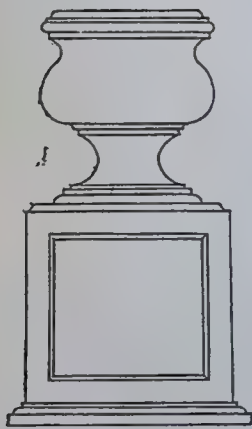


FIG. 1.

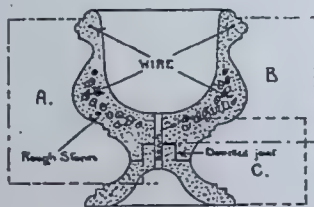


FIG. 2.

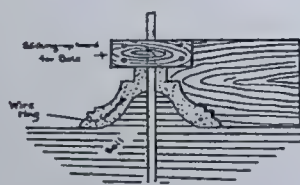


FIG. 5

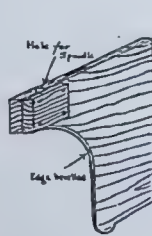


FIG. 3.

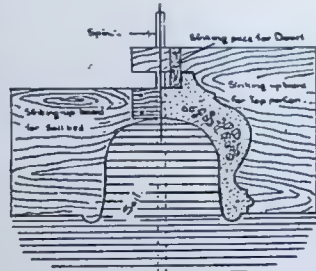


FIG. 4.

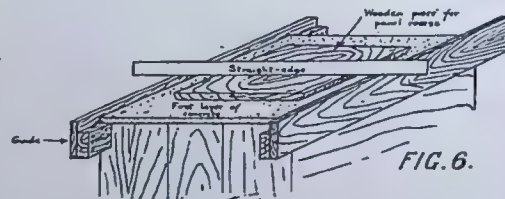


FIG. 6.

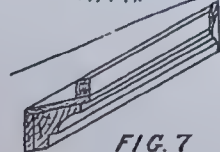


FIG. 7



FIG. 8

by the method shown in Figs. 4 and 5. This method applies to all the boards.

Around the base of spindle form a mound of soil, the shape being made or swept up by the board B, Figs. 2 and 3, this shape being the same as the vase interior. The surface may be bedded firmly and smoothly by the aid of the garden trowel.

Remove the board B and fix into position board A. Over the shape made by the first board, and around the spindle, place a mixture of one part cement and three parts fine sharp sand, well mixed. The board is then revolved, giving the shape of the top portion of the vase exterior.

Where excessive bulging or overlapping takes place in the shape, bed in (but under the surface) pieces of coke or rough stones, this saving cement and also giving added strength. Also bed in, as shown in Fig. 2, rings of wire or hoop iron, this giving circumferential strength. Allow the whole to settle, and before removing board go over the surface with a liquid mixture of cement and water. This fills up all the pores which are more or less incidental to concrete.

which will give the reverse impression and will prove quite suitable for the plinth. The hollow or fillet on upper surface will be formed by the gauge, Fig. 8, which can be cut out of a piece of $\frac{1}{2}$ inch wood bevelled at the edge.

Fix the two guide strips to the box length, projecting above the surface the entire amount of concrete which is going to be deposited; $\frac{3}{4}$ to 1 inch should be ample. Stud the surface with bent nails, their purpose being to hold the concrete to the box after it has dried. Over the entire surface place a facing of concrete, the same mixture as used for vase. This facing thickness is

regulated by the panel piece which, when placed on this surface, should be level with the guides.

Fix the panel piece in correct position and fill around with concrete, levelling with a straight edge; this rests on the edges of the guides and also on bedding on panel piece. When this has become set, remove panel piece and allow side to become thoroughly dry.

If the surface is at all porous go over with a fluid mixture of cement and water. This operation will be repeated for the three remaining sides, allowing each side to dry before commencing another.

Place the pedestal into its garden position where the finishing work can be done. Give the top a layer of one part cement and two parts of sharp sand, the surface having previously been studded with bent nails. Then finish the edges with the template Fig. 8.

At the box base place the same mixture of concrete. The moulding block, Fig. 7, gives the plinth formation, its angles making the corners sharp and well defined. If the plinth is at all heavy, pierce the concrete and box with nails for the same purpose as for pedestal surfaces.

The sketch shown at Fig. 1 is given more for the purpose of indicating the method of work than as a design for following closely. Many different forms of vases, columns, etc., of varying size can be made in this way. In a large garden such ornaments have a handsome appearance.

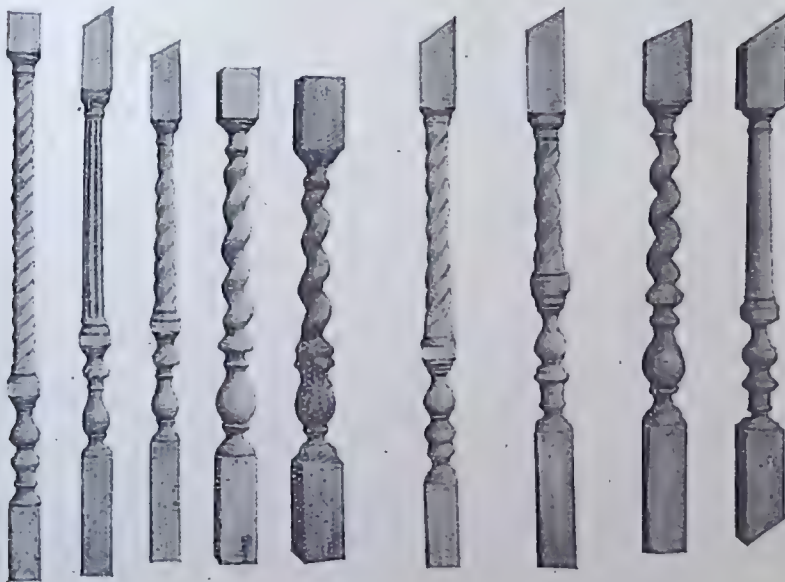


FIG. 1.—BALUSTERS IN VARIOUS WOODS FROM THE VICTORIA AND ALBERT MUSEUM, SOUTH KENSINGTON—SEVENTEENTH CENTURY.

SOME FINE OLD TURNED WORK.

OUR illustrations show some interesting examples of wood turning in the South Kensington Museum, applied to various objects. The staircase balusters (Fig. 1) illustrate very well the endless variety obtainable from such comparatively simple details of construction. The richness of form evolved has converted pieces of wood into objects of furniture, and when we consider the rate at which such work is produced it seems surprising that this method of enrichment is not more frequently adopted.

Such results as these under consideration involve the application of certain principles of design. The word *design* may be employed in several senses, but the sense in which it is here used is to describe *proportioning*. The initial stage of the baluster is a stock of wood forming one of a series. This stock of wood is of uniform thickness from base to top, but an added interest takes place by varying its outline if only by a band here and there. Add more bands anywhere, and it will be noticed that



FIG. 2.—ITALIAN CHAIR, SEVENTEENTH CENTURY.

Have You Visited London ?

It is possible that many WOODWORKER AND ART CRAFTSMAN readers have never yet seen London—to whom its ancient abbey, its great-domed cathedral, its art galleries and national museums are only names. Cheap week-end tickets to London may be had from all parts of the country, and Dallers' Tours have made special arrangements to accommodate visitors at good hotels at prices varying from 4s. to 8s. 9d. per day. Write (enclosing a penny stamp) for *Booklet No. 19*, to Dallers' Tours, Sardinia House, Kingsway, London, W.C.

those set at irregular intervals are the more pleasing. This illustrates the two first principles in design, *repetition* and *variety*. So important are these principles that they constitute practically the whole art of architectural composition.

The baluster examples shown are eminently fine examples of a period when architectural design had reached a very high level—the end of the 17th or beginning of the 18th century. It will be observed that variety is not only introduced into the bands or mouldings themselves, in their form, their width and their distances apart, but also

in the spacing between the groups and the varied contrasts of spiral and other forms into which the baluster is divided.

The application of turning to modern work is almost endless. Some hints for the disposition of such may be gained by a study of the old work. Take, for instance, the very fine application of turning to the Italian chair, Fig. 2, and the harmonious contrasts of form resulting therefrom, the round, vase-like surfaces being exactly the thing required to harmonise with the flat and square portions. In the Jacobean chair, Fig. 3, the turning is very much simpler in its forms than the preceding. It is, however, excellent in its pro-



FIG. 3.—SEVENTEENTH CENTURY ENGLISH (JACOBEOAN) CHAIR.

portioning, making up into a good piece of design. Such globular designs as are here employed bear much the same relation to the square portions that figure sculpture bears to the rectilinear in architecture, giving a boss which catches the light, and for such simple uses is probably much more in keeping than more elaborated forms would be.

Dry Point Etching.

This is really a form of engraving, but is usually considered to belong to the processes of etching. It is merely scratching into the bare metal with a steel or diamond point. This not only ploughs into the copper, but turns up an edge or furrow, technically called "burr." The greater part of the printing quality of "dry point" is given by this burr, to which the ink clings in printing. When this burr is removed the lines print clear as shown in the proof.

The Many Uses of Sawdust.

Of uses for sawdust there are many. Most of them have been developed in Germany, where the need for economical use of more or less waste productions has long been pressing urgently upon progressive manufacturers. Sawdust has been used for fuel; also as a source of distillation products such as acetic acid; as a plastic material such as xylolith; as a cement; as a packing material for boxes; as a substitute for bone ash; as a non-conducting filler between partitions of houses and refrigerators, and so forth; as a coating for linoleum; as a flooring material; as an insulator for steampipes; as a material for brickmaking; as a carbonising material in burning pottery; as a coating of wood wool in wall-paper manufacture; as an absorbent acid of ammonia in stables; as a litter for the bedding of animals; as a part in the preparation of composts for gardening; as for purification of gases; as in the cementation of steel; as in the prevention of boiler scale; as a cleaning material by jewellers; as in preparing wood meal fodder for cattle; as an abrasive; as in the manufacture of carborundum and of calcium carbide in the electric furnace, &c.

Sawdust for Fuel.

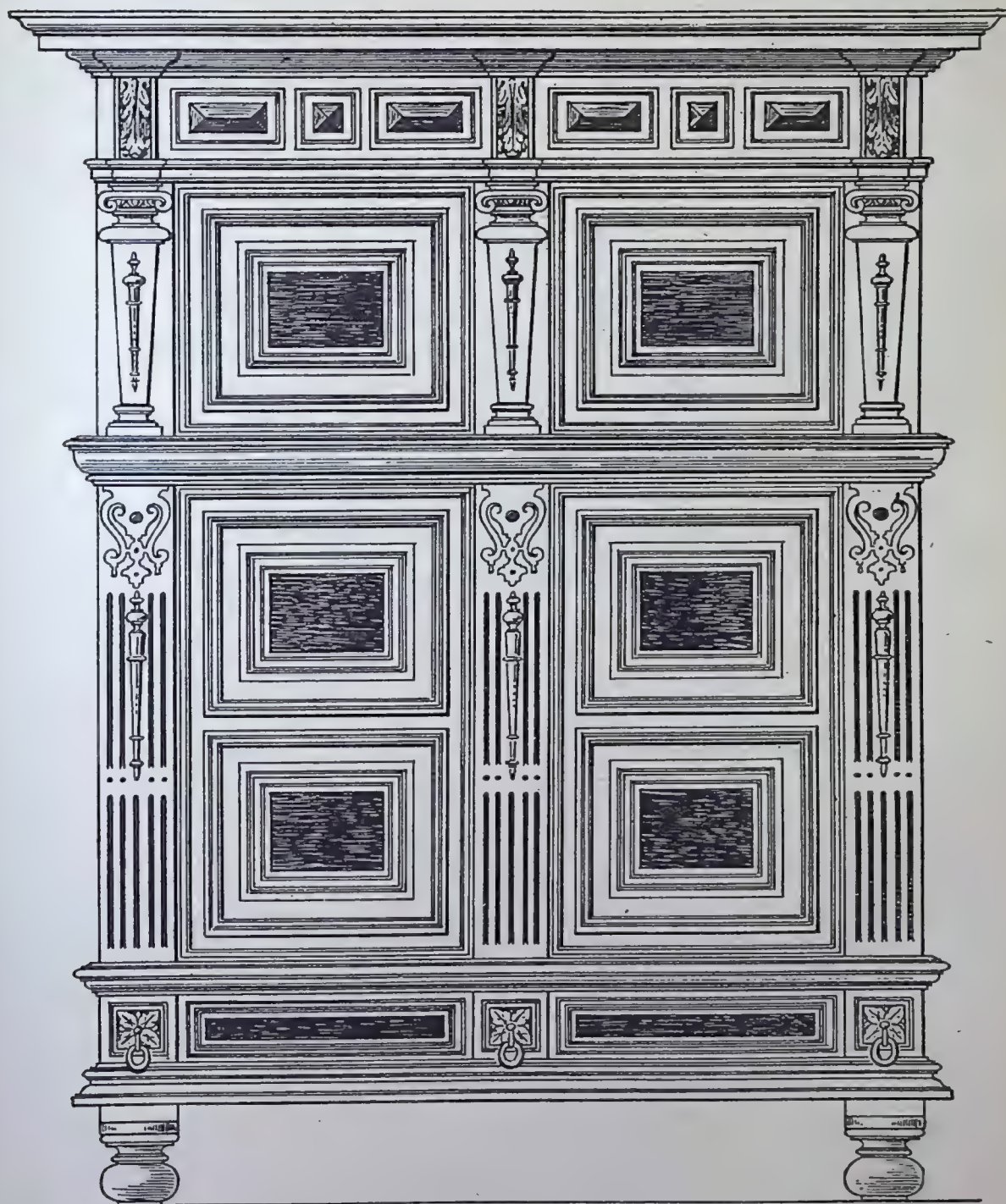
Then again, it is well known that sawdust is used in the form of briquettes for fuel. A German firm, says *Woodcraft*, uses a machine capable of making $1\frac{1}{2}$ tons of pine sawdust into blocks of fuel every hour. It would seem that any attempt at the making of fuel briquettes is to be first considered in the light of the particular wood at hand. A very resinous wood would compact easily together, while a non-resinous variety would be less readily made into firm bricks. Some soft woods may probably be conveniently handled by heating to first soften the resinous contents of the material before pressing it into shape as fuel briquettes. Firelighters, as they are termed, are made with the help of a very dark and very cheap resin. The resin is heated in an iron pot, then gradually mixed with the dried sawdust. The mixture is spread on a well-oiled bench and a grease roller forced over it which squeezes it into furrows and separates these again by ruts running at right angles. The chunks are then broken apart and are ready for packing and sale. The high cost of wood has made these things a necessity in some countries.

Soft Ground Etching.

In this process ordinary etching ground is used mixed with about half its weight of lard or tallow (more or less according to the temperature of the air). The ground is laid as in ordinary etching and smoked. When cold, thin paper is carefully strained over it. Upon this the drawing is then made with a lead-pencil, which causes the paper to pick off the ground in a broken line, corresponding to the grain of the paper, the hardness of the pencil, and the pressure used. The plate is afterwards bitten in the same manner as an ordinary etching.

Holidays—Where to Spend Them.

For holiday trips in any part of the British Isles—the Scottish Highlands, cruises round the Hebrides, tours in Wales, weeks at the English Lakes, at Killarney, the Isle of Wight, the Channel Islands, at all seaside resorts, etc.—write (enclosing a penny stamp) for *Booklet No. 19*, to Dallers' Tours, Sardinia House, Kingsway, London, W.C.



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DESIGN SUGGESTION FOR OLD FLEMISH LINEN CHEST OR WARDROBE.

RECENT EXHIBITIONS.

Exhibition of Turnery.

The thirty-fifth exhibition of specimens of wood and metal turning, under the auspices of The Worshipful Company of Turners, was held in the Mansion House, London, from April 23rd to 25th. Some remarkably fine work was on view. In the trade section the exhibit placed first included a pair of tall palm stands and several billiard table legs, all excellent in design and finish; the work of the second prizeman was of quite equal merit technically, but somewhat less important and appropriate in design. In the apprentice class a better exhibition was submitted than any which has been seen for many years past, and the prizes

by residents interested in the revival of arts and crafts. The object of the various guilds assembled at the exhibition was to foster old industries for the benefit of villagers whose earnings might thereby be supplemented.

The stalls numbered twenty-five and included the South Kensington Royal School of Art Needlework; the Beer Basket Industry (founded in 1908 for the employment of fishermen and boys during the winter months); the Guildford Potters' Art Guild (founded by Mrs. G. F. Watts, and carried on by the villagers); the Porlock Weir (Somersetshire) leather industry; the North Curry carving industry; Elton pottery; Cullompton Weaver's hand loom industry; Ragley Guild of Needlework; Ickelford art industry; Raffia chair industry; Penzance enamel and embroidery, &c.



CARVED PANEL (RIPON EXHIBITION) BY W. SOWERBY.
(WOODWORKER AND ART CRAFTSMAN Silver Medal Award.)

were particularly well deserved. The exhibits from the Industrial and Training Schools indicated the same gratifying progress which has been noticed in former years. The mastery of their tools shown by some of the boys not more than 14 or 15 years of age was remarkable, and promises well for their future as craftsmen. With the additional opportunities which will follow the presentation of the Company's lathes to a number of Schools which have not hitherto possessed them, it may fairly be anticipated that this progress will not only be continued but greatly extended. The amateurs who exhibited were not numerous, but it is difficult to imagine more beautiful work in wood and ivory than that shown. The silver medalist of last year exhibited an ivory vase and cover, 18 inches in height, which in design and workmanship have probably never been surpassed in the history of these competitions. Some of the metal turning exhibits showed remarkable skill in the handling of tools and in the finish of the work. The prizes were presented by the Lord Mayor.

Exeter.

The Devon Arts and Crafts Guild held its third exhibition at Queen's Hall, Exeter, during the latter part of April. This year's exhibition differed from its predecessors inasmuch as it was arranged less for the display of the craftsmanship of individuals than to give an opportunity for collective exhibits by societies affiliated to the County Guild, and existing in towns and villages where they have been promoted

The exhibits included cabinet work, wood carving, inlaying, basket work, wrought and beaten metal work, jewellery, enamel work, leather work, embroidery, lace, &c., and many beautiful articles were shown.

Ripon.

The Ripon Industrial Society's seventh Exhibition of Arts and Crafts took place at the Victoria Opera House, on April 9th, 10th, 11th, and was one of the most successful the Society has so far held, a special feature being the open classes, which brought in much work of a very high order. The work received in the class for wrought work in copper and silver was very beautiful, the first prize going to A. J. Hughes and the second to J. Gatecliff. In the class for jewellery in gold and silver many entries were received, some specimens being of intricate and exquisite workmanship. Miss K. R. Clayton received the first prize; Miss S. Cooper was second, with only one specimen—a pendant formed in the shape of a galleon with all sails set.

Class 14, for carving (the design to be original or adapted), did not receive as many entries as it should, but the work was good, and the designs on the whole were pleasing. Miss G. Forge received first prize for a panel of a cupboard, the design of cupids and foliage being well carried out. J. Larkin, who was second, showed two clever head studies. In Class 15, twenty-seven entries were received, many being large and massive bits of work. W. Sowerby, who received first prize and also the silver medal of THE WOOD-

WORKER AND ART CRAFTSMAN for the best carving in the exhibition, sent a long panel carved in the most intricate manner, the small scrolls, flowers, &c., being finished most finely. A good deal of undercutting was used, the whole being remarkable for cleanness of cutting. From the point of workmanship, it was far ahead of the rest of the work, though the design was too crowded to be absolutely pleasing. Miss Curtis, of Waterford, received the second prize and the WOODWORKER bronze medal, for a piece of work, good all round in design and workmanship.

In those classes kept entirely for local exhibitors some good work was received, a feature being the carved portions of the screen for the new Memorial Chapel at the Minster, a reproduction of the old screen in the chancel. This has been carved by local



CARVED PANEL (RIPON EXHIBITION) BY MISS CURTIS.
(WOODWORKER AND ART CRAFTSMAN BRONZE MEDAL AWARD.)

classes, and was not for competition. The carving sent in by boys showed great promise, and the fretwork was also good, the two classes for manual instruction receiving many entries. Other classes were for decorative art applied to woodwork, and a class for handicrafts not included in any other class showed a variety of exhibits, from a model yacht to a chair seated with twine.

Eye (Suffolk) Exhibition.

The Exhibition in connection with the Suffolk Art and Aid Association is now announced to take place in the Town Hall, Eye, on August 6th and 7th. The handicraft sections will include: Wood Carving, Chip Carving, Leather Work and Bookbinding, Metalwork,

Jewellery, Enamelling, Basket Work, etc., Needlework, Lacework, Wood and China Painting, Pen Painting, etc. There are also the usual Sections for Oil and Water Colour Painting, Etching and Photography. Particulars may be had from the Secretaries: Mrs. Edgar Barnes, Hill House, Eye, Suffolk, and Miss Savory, The Rectory, Diss, Norfolk.

How to Visit the Ghent International Exhibition.

TO those interested in decorative woodwork and in arts and crafts generally, the Ghent International Exhibition will be the feature of 1913. But, quite apart from the wonders of the exhibition, the mere fact that it is being held at Ghent affords an exceptional opportunity for one of the most enjoyable Continental holidays that it is possible to take. Ghent itself promises to be fairly full during the summer months, but perhaps no city in Europe is a better centre—for its own sake as well as for walking and other excursions—than the old-world town of Bruges, with its mediæval buildings, its far-famed belfry, its canals and quaint bridges. Dallers' Tours are making a remarkable offer of a fortnight in Belgium, for a sum of just over £5, including all travel and board. The whole fortnight may be spent at Bruges, with excursions to Ghent and other places of interest; or, at option, one week may be devoted to Bruges, while the other is spent at Knock-sur-Mer, the most northerly seaside resort in Belgium. Second-class rail throughout is provided, and visitors stay at a comfortable high-class pension in a fourteenth century mansion (formerly a Dominican monastery) near the Place Grande. No such holiday could be more attractive, and we have little hesitation in advising WOODWORKER AND ART CRAFTSMAN readers to write at once (enclosing a penny stamp) for *Booklet No. 19* to Dallers' Tours, Sardinia House, Kingsway, London, W.C. This booklet (No. 19), which we have before us, gives full particulars of this unique holiday offer, as well as others equally attractive and cheap to France, Switzerland, Holland, Norway, etc.

Forthcoming Exhibitions.

We shall be glad if Secretaries will kindly send us early intimation of forthcoming Arts and Crafts Exhibitions.

Aug. 6 and 7.—Suffolk Art and Aid Associations' Exhibition, to be held in the Town Hall, Eye. Secretaries: Mrs. Edgar Barnes, Hill House, Eye, Suffolk, and Miss Savory, The Rectory, Diss, Norfolk.

Oct. 13 to 18. Sunderland Arts and Crafts Association Exhibition, to be held at the Victoria Hall, Sunderland. Secretary, Mrs. Gordon Bell, St. Bede's, Sunderland.

Open till November.—International Exhibition at Ghent (with National Sections for Applied Art).

In applying to Secretaries for schedules and particulars, a penny stamp should be enclosed for postage.

CARVED CANDLESTICKS.

From the Solid.

THE pair of candlesticks illustrated and described in this article were made from wood cut from old oak fence posts, which had been employed in that capacity for at least half a century, and, after the demolition of the fence, had been lying in a dry, airy shed for another couple of years or so. The wood was, therefore, thoroughly seasoned and dry, and showed no signs of shrinkage or of warping.

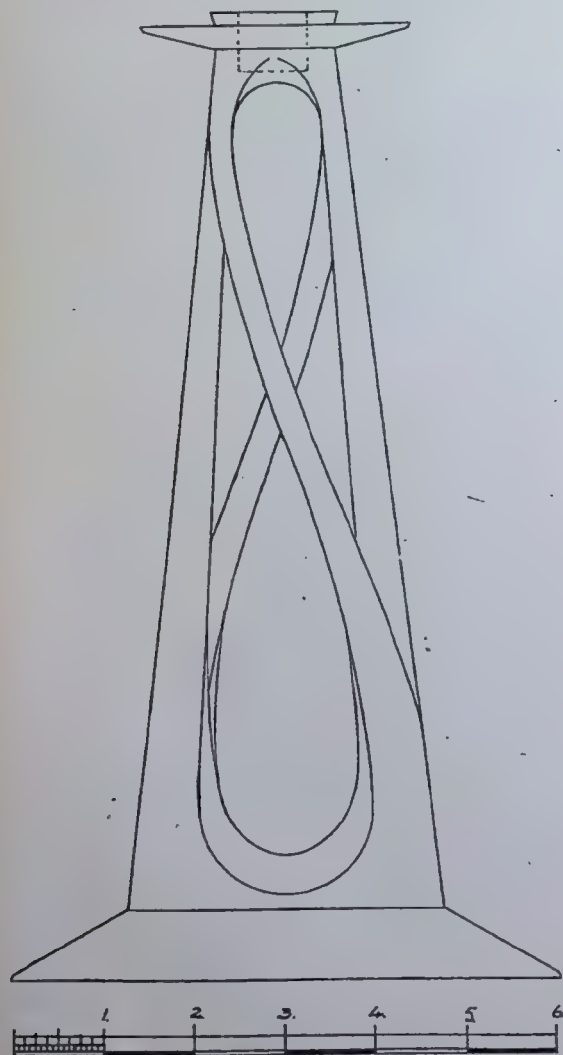


FIG. 1.—CARVED (SOLID) CANDLESTICK, 11 INS. HIGH.

This is a point of great importance in working a design such as this in oak, and should there, therefore, be any doubt about the condition of the wood available the pieces selected should be laid aside in a suitable place to season; and when the work is roughed out

there should be a considerable interval before it is finished, so that any twisting due to shrinkage can be corrected later on.

Assuming, however, that the wood is well seasoned, the actual carving is quite simple, and the result will be such as to amply repay the care and labour expended, apart from which the work has an interest and fascination distinct from ordinary relief carving.

Oak is perhaps the most suitable wood to use as it fumes to a rich tone of brown, and almost any depth of colour may be obtained according to the length of time the wood is left under the influence of the ammonia fumes. Moreover, the natural markings of the wood

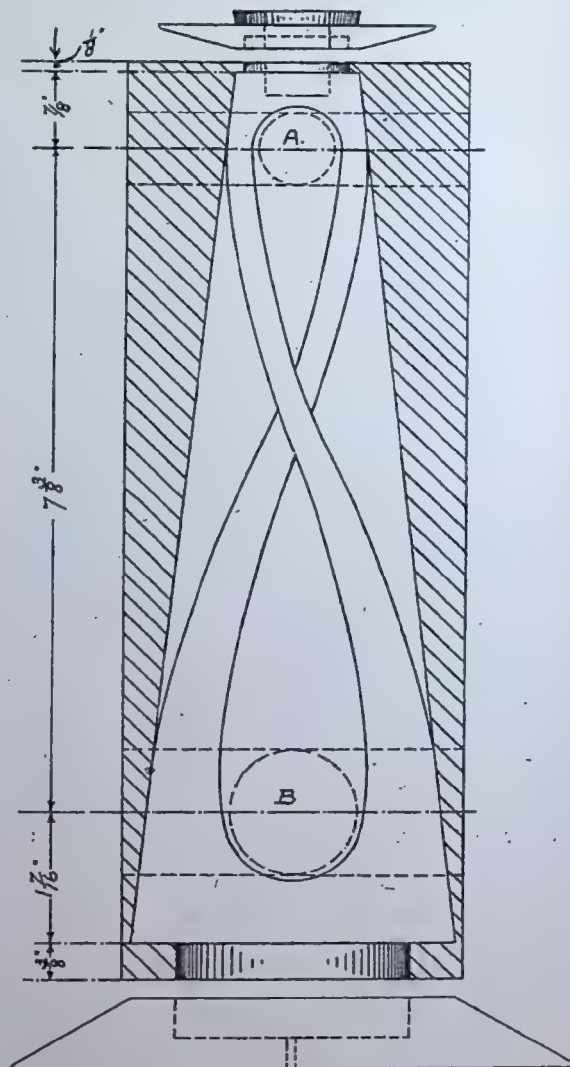


FIG. 2.—SECTION, WITH PATTERN FOR CARVING.

and the richness of the tones are brought out well by polishing with beeswax.

The method employed in making the candlesticks in the photograph was as follows:—First, the wood was cut roughly to the correct length, and was accurately squared up on all four sides, and carefully tested with

square till properly true. Do not cut the wood to the "tapered" shape yet, but make it parallel throughout.

The dimensions were next marked on the block, and the two holes at A were drilled through the block at right angles, and the two holes at B drilled similarly. Next the block was centred in the lathe and turned down to correct length, and the rebates turned down at top and bottom to the correct diameter for the fitting of top and base pieces.

Carving the Blocks.

Now the blocks were cut down to the truncated cone shape, and this work was facilitated by marking off the correct shape and then making a number of cross saw-cuts. A mallet and chisel then quickly removed the superfluous timber, and a sharp plane did the rest. Of course a circular saw, or a large band saw, would do this work far more quickly and accurately, but these are luxuries possessed by few amateurs.

If a lathe is not available the top and bottom rebates may be cut by hand, in which case it will be better to make them square and use a cross-cut saw.

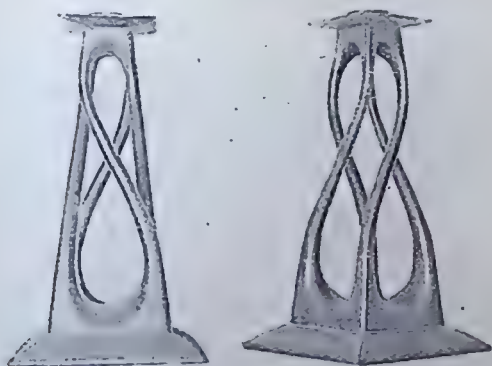


FIG. 3.—PHOTOGRAPH OF THE CARVED CANDLESTICK—
FRONT AND ANGLE VIEWS.

The design as shown in Fig. 2 was next drawn on all four sides of the cone-shaped blocks, and then began the removal of the pear-shaped pieces of which A and B are the large ends in Fig. 2. This was done from all four sides, working a little from each side in turn, and after a little the gouge pierced through, and the work then proceeded far more rapidly as the necessity for scooping was removed.

Curved and straight gouges were used intermittently, being kept as sharp as possible, in order to avoid a slip that might have destroyed the whole job.

Finishing.

When these pear-shaped portions were removed the remainder of the roughing was much simplified, and the more laborious work of finishing was entered upon. In order to ensure all the four legs of the design being regular and uniform in thickness at any given section, they were first finished square, and afterwards the edges were gradually rounded off until they were as nearly as possible circular in section. Wood rasps and

files, both curved and straight, were found most useful, and possibly indispensable, in doing this rounding of the inner edges, and in obtaining a smooth and even surface of the more inaccessible parts. A vigorous and lengthy application of sandpaper was next indulged in, and a beautifully smooth surface thus obtained.

The making of the top piece and the base presented no difficulty, and the lathe was again made use of to recess the pieces to correct diameter for fitting to the top and base of the carved column.

A hole was drilled through the base before finally fitting together to allow the escape of air and superfluous glue, and thus prevent a lock. In the top piece the hole for the candle made it unnecessary to take this precaution.

Fuming and Polishing.

The finished pieces were put separate into the fuming cupboard—which was an old soap box with cracks and other leaks stopped by pasting paper over them—and left for about 12 hours, so that as dark a shade as possible might be obtained. It is important to fume the pieces before glueing any part, as the glue protects the wood from the action of ammonia and the result is likely to be blotchy where glue has been used.

For polishing a mixture of beeswax and turpentine is best. Do not use paraffin wax, which is much cheaper but far inferior. Pure beeswax can be obtained from any oil shop, and should be mixed with turpentine. To do this, the two should be placed together in a saucepan or other metal receptacle and carefully heated until all the wax has melted. Great care must be employed lest the mixture catches fire. A large piece of cloth soaked in water should be kept handy, and in case of fire the flames are immediately extinguished by means of this cloth.

Apply the beeswax when hot, and for this purpose use a small piece of rag and smear the hot wax evenly over the surface of the article to be polished. There should be sufficient turpentine in the mixture to prevent the mixture from becoming quite solid when cold. This allows the wax to be rubbed well in and administered evenly over the whole surface. The turpentine will then gradually evaporate, leaving the wax in the wood, and vigorous rubbing with an old duster or any old rag will quickly impart a magnificent polish which greatly enhances the beauty of the finished article.

In order to prevent the candlesticks from getting damaged through the candles burning down in the sockets, a small copper cup or socket may be beaten, stamped or soldered up to fit into the wooden socket of each candlestick.

New Incubators.

We have been looking through the incubator list of the New Poultry Syndicate—a comprehensive guide for those who wish to take up poultry—and are impressed by the thought and care which is now being devoted to this interesting occupation. Provided a reasonable amount of care and attention are bestowed there is no reason why anyone should not be able to turn twopenny eggs into shilling chickens in a very short time; and besides forming a most profitable pastime the incubator is undoubtedly an invention that is well worth studying. The manager will be pleased to send a copy of this list to any who mention that they are readers of THE WOODWORKER if a postcard is addressed to him at Cloubrock Road, Stoke Newington, London, N.

DEMONSTRATION VERNIER CALLIPER.

To Read $\frac{1}{1000}$ inch.

THE accompanying photograph is of a Vernier calliper gauge, designed for demonstration purposes. It is three times the size of an ordinary "Starrett" gauge and in form is a close copy of this excellent tool. The essential parts are as follows:—

The beam, which is made of selected white plane tree; the calliper jaws, which are of lancewood and faced with brass; the carrier, also of lancewood; the Vernier scale slide, of ebony; and the Vernier scale, of lancewood. Each part was planed and fitted with great exactness. The calliper jaws were faced with 1 in. by 3-16 in. strip brass, fixed with two B.A. No. 3 countersunk head brass screws in each. The holes were only slightly countersunk for the screw heads, the screws being very tightly screwed in, and the projecting heads filed down flush so that no trace of screws appears. The holes to receive the screws in the wood jaws were tapped with a No. 3 B.A. plug tap, a good thread resulting in the hard wood.

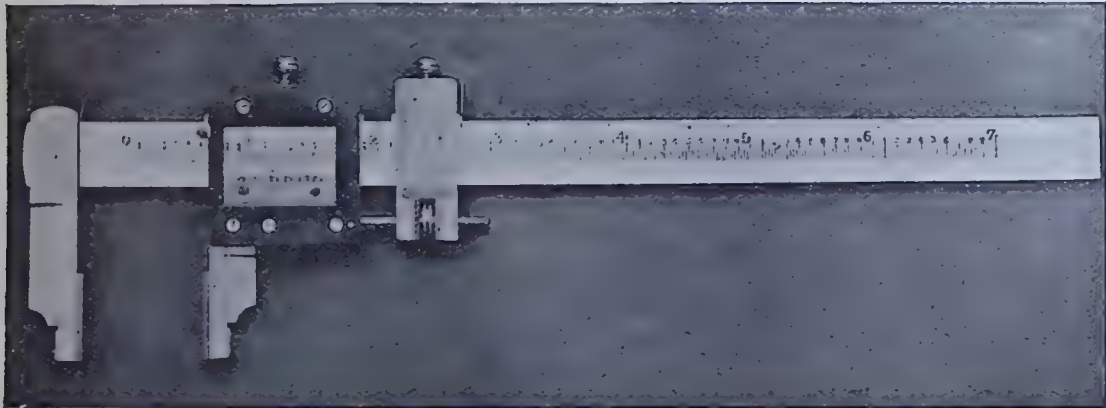
but they greatly add to the finish of the model. The ebony took quite a good thread. Ordinary wood screws are useless in work of this kind as they require to be screwed and unscrewed so often in fitting. It will be seen that one of the caliper jaws fits in between the two ebony frames.

The Vernier scale was accurately fitted into the upper frame of the slide by means of two B.A. No. 5 screws, the countersunk heads fitted into sockets. This scale was adjusted to slide nicely in contact with the beam scale.

The adjusting screw is a piece of $\frac{3}{8}$ in. brass tube, 1-16 in. thick, screwed with ordinary brass thread (i.e. 26 to the inch), no particular pitch being called for when a mere adjustment is needed.

The finger wheel was turned from a casting and made a nice fit between the faced carrier jaws. The hole was drilled in the lathe and tapped 26 threads, and the wheel afterwards turned and knurled over the top.

After the several parts were made the whole was assembled and the necessary adjustments made to the slide and carrier. The calliper jaws were then brought into contact, and any needful filing done to give an accurate bearing upon each other when closed, without straining the model, and the outer or "inside" calliper surfaces attended to for parallelism.



MODEL DEMONSTRATION VERNIER CALLIPER, IN WOOD AND METAL, TO READ $\frac{1}{1000}$ INCH. ABOUT 2 FEET LONG. MADE BY CHARLES REID.

The carrier for the finger wheel was prepared in halves, as it was necessary to face its inner surfaces with brass to give a good bearing for the wheel. The halves are kept together by two plates, one which will be observed immediately above the inner facings, and the other on the top through which the pinching screw also passes. The halves were glued and secured with "Starrett's" toolmakers' cramps while the necessary screws and rivets were being fixed.

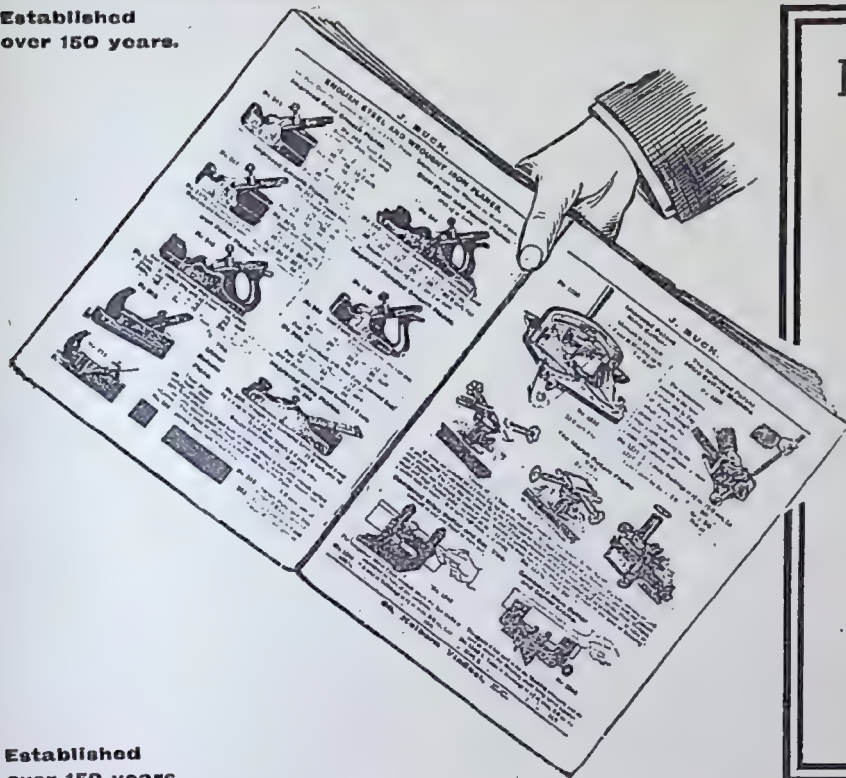
The beam is a nice sliding fit through the slide and the carrier, and brass sliding leathers will be noticed on the top of the beam under the pinching screws. A 3-16 in. groover's spring washer, with brass pad on top, was placed under each pinching screw, and by this means a uniform tension is secured.

The ebony slide consists mainly of two parts: an upper and lower frame. These were secured to each other with No. 3 B.A. screws, the heads of which fit into brass sockets. These of course may be omitted,

Being satisfied as to the workmanship throughout, the Vernier scale may be carefully marked off with a hard pencil, finely sharpened, and the figures stamped with $\frac{1}{8}$ in. types, and then fixed in its place on the slide. The calliper is now closed and the Vernier scale zero marked on to the beam. The slide and carrier are now removed, and from the zero the necessary inches, tenths and fortieths are marked on the beam and typed—the inches with $\frac{1}{8}$ in. types, the intervening 10ths with $\frac{1}{8}$ in. types. The divisions thus found and marked were all carefully scribed with a common marking knife—equally sharpened, and after scribing the cuts were rubbed over with printer's ink—the outstanding inches in red, all others in black.

The model was polished with white polish, afterwards rubbed with ronuk to make the sliding easier. It was a very interesting model to make and will amply repay the labour and care of anyone who may set out to construct one similar.

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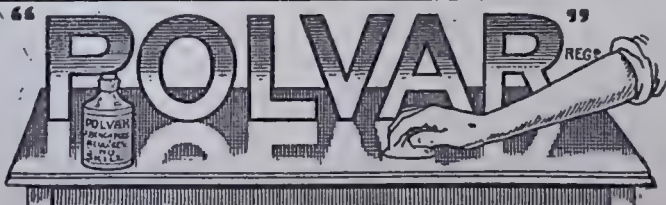
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FRENCH POLISHING.

Spiriting-Off.

THE final process of spiriting or finishing off is very similar to that of bodying, the principal difference being that, instead of polish on the rubber, towards the last methylated spirit alone is used. By this means the oil which has been used with the polish is "killed," so that none of it remains on the work, and at the same time the bright gloss, which is such an important feature of French polishing, is produced. As the durability and general excellence of the polish depends on the way the bodying is done, so does the brightness depend on the way the spiriting is managed. By it all the smears and rubber marks caused previously must be removed till a glossy hard film of shellac, absolutely free from oil, results.

Strictly speaking, it is really the thin coating of shellac which is polished, the wood itself not being touched by the spirit rubber, by means of which the gloss is produced. It is important that the novice should bear this in mind, for the spirit, acting as a solvent on the shellac, would, if used in excess, wash it all away and leave the wood bare. This is not what is wanted, the object of the spirit being merely to clean off the oil and attendant smears. In actual practice this work is perhaps the most delicate part of polishing. To do spiriting-off really well requires a considerable amount of experience and skill. When one can spirit off properly he may consider that the greatest difficulty in French polishing has been overcome.

First Phase of Spiriting.

Mr. A. T. Johnson, in the *American Woodworker*, gives several useful hints on this phase of the work. At the commencement, spiriting-off is almost identical with bodying in, the chief distinction being that polish considerably diluted with methylated spirit is used instead of pure polish. As the rubber dries out it is charged with polish each time more diluted than previously. Thus the first time there may be three parts polish, the next equal quantities, and the third time three parts spirits to one of polish, and finally no polish at all. The exact quantity required will depend on circumstances, such as size of work, quantity of oil to be got rid of, and so on, the chief point to be insisted on being that the quantity of polish in proportion to spirit is gradually lessened.

The easiest way to moisten the rubber will be to drop the polish and methylated spirit on it without measuring either of them, just estimating the quantity, and, as before, taking care not to have the rubber too wet. By the use of gradually diluted polish the processes of bodying and spiriting are merged into each other without any abrupt transition, and this intermediate stage might either be classed with the former or the latter, belonging as it does to both of them. When all the polish in the rubber has been worked out, the spiriting off strictly speaking begins.

A clean rubber is taken for it—that is, one which is used for spiriting only must be taken—and is moistened with methylated spirit alone. Any excess in the quantity of spirit will be very apt to wash the body away, and care must be taken not to let the rubber stand on the work, or the body under it will be injured by being softened, and so washed away.

The rubber used for spiriting should have four coverings, equal care being used with all of them not to have any crease or fold on the face.

The Last Rubbing.

As each covering dries in turn it is removed, till at last the single one is left. Of course, when it dries, the rubber must be re-charged and re-covered. The motion of the rubber in spiriting is the same as in bodying, except that towards the finish it will be an advantage to rub rather more in the direction of the grain of the wood, and the final rubs must be so. The pressure may be increased as the rubber dries, but at first it should be very light, and the same may be said of the finishing touches. Many polishers give these with the rag coverings alone.

The novice will find the difficulty of getting a good finish enormously increased in proportion to the size of his work. It is therefore desirable that he should for a time confine his attention to small pieces. No attempt should be made to finish the work completely till all the oil has been got rid of. Although it is not difficult for an experienced polisher to know when this has been attained, the beginner may not find it quite so easy. Oil may be detected by rubbing the work with the finger and noticing the greasy feel and smear, but this test is hardly delicate enough to enable him to recognise the presence of the small quantity which would act prejudicially by preventing a bright, good polish. If there should be any great difficulty in getting this it will probably be owing to some of the grease remaining, and the only thing to be done is to continue spiriting-off.

It is often a good plan to breathe on the work, to see if there is any oil still on it. If there is, the moisture from the breath will take some time to evaporate, while if the surface is really free it will go almost instantaneously. In order to get rid of the oil thoroughly, various expedients have from time to time been advocated, but none are at all to be compared with the orthodox, if more tedious, process of patient labour. That some remove the oil speedily there can be no doubt, but rapidity is gained at the expense of durability and brilliance.

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AN ANGLER'S CABINET.

THE cabinet shown in the accompanying illustrations was made to hold the tackle, etc., used by an angler.

A feature of the cabinet is the shallow top drawer, which contains all the necessary hooks, silk reels, varnish, tools, etc., for dressing flies, and may be simply lifted out on to a table or held on the knee when required for that purpose. As the fly-hooks are finished they are stuck into a bar of cork fixed to the bottom of the drawer, and when this is pushed back into its place they can dry in safety. The narrow

wide and $\frac{1}{2}$ in. deep, and dovetail-grooved to receive the other front rails. These rails are 1 ft. $5\frac{1}{4}$ ins. by 3 ins. by $\frac{1}{2}$ in., and are let in from behind to hide the dovetail joint, the short grooves being covered by the drawer guides, which are screwed to the gables, and tenoned at their ends to fit into short grooves run in the front rails. Two short divisions between the small drawers are dovetailed into the front rails, runners and guides being fitted behind, these being supported at the back by the rails shown. The back, tongued and grooved and glue-jointed, is nailed to the back rails. The top, 1 ft. $7\frac{1}{4}$ ins. by 1 ft. 7 ins. by $\frac{3}{4}$ in., projects $\frac{3}{4}$ in. over front and sides, and $\frac{1}{4}$ in. over the back, and is fixed by screws from underneath through

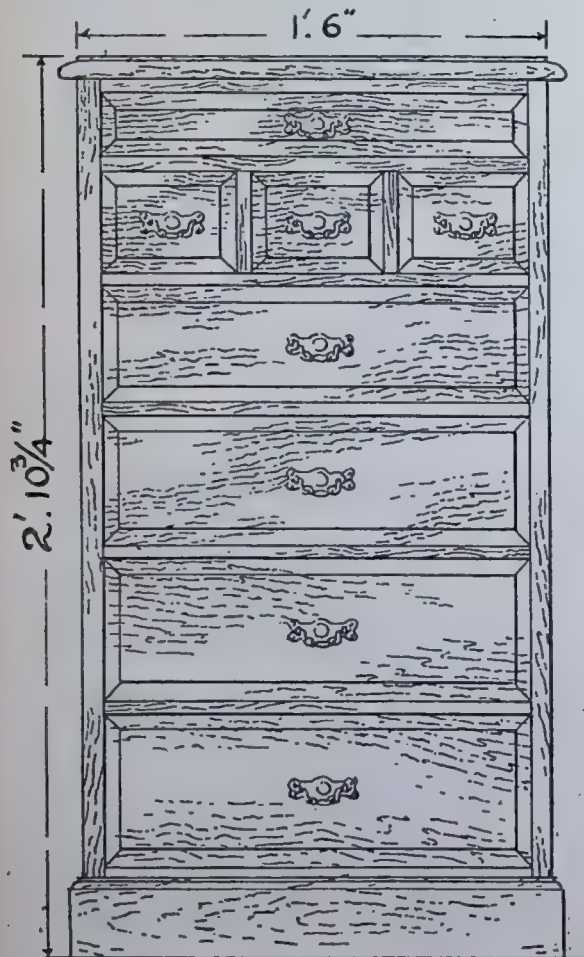


FIG. 1.—ANGLER'S CABINET. FRONT VIEW.

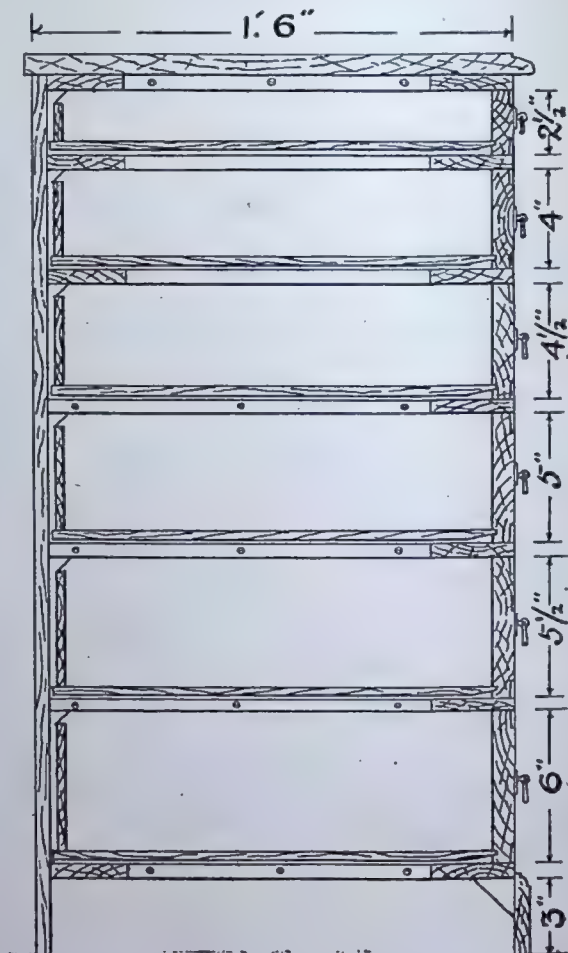


FIG. 2.—SECTIONAL SIDE VIEW.

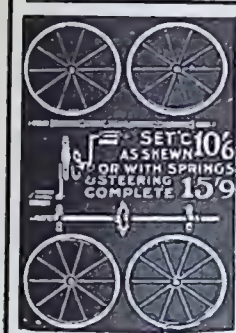
drawers are a handy size for holding extra feathers, each variety being kept in a separate envelope, and the other drawers hold fly-books, reels, tackle, etc.

All exposed parts are of mahogany, French polished, the sides, backs and bottoms of the drawers, drawer runners and back of the carcass being redwood.

The height over all is 2 ft. $10\frac{3}{4}$ ins., and the width and depth of carcass, not including projections, is 1 ft. 6 ins. The gables are 2 ft. 10 ins. by 1 ft. 6 ins. by $\frac{3}{4}$ in., rebated to receive a back $\frac{1}{2}$ in. thick, and dovetailed on top for rails at back and front 3 ins.

the rails and drawer guides, and has a $\frac{3}{4}$ in. moulding run on the front and sides. The plinth, $3\frac{1}{2}$ ins. deep, has a moulding run on the top, and projects $\frac{1}{4}$ in. on to the bottom rail; it is fixed by screws from the inside, the corners being blocked. The drawer fronts, $\frac{3}{4}$ in. thick, have a $\frac{1}{2}$ in. fielding run round about $\frac{1}{4}$ in. deep, and are fitted with brass handles. The drawer sides, $\frac{3}{4}$ in. thick, are dovetailed as usual to the front and back, the back being kept $\frac{1}{2}$ in. less in depth than the sides. A 3-16 in. groove is run along the drawer fronts and sides to receive the $\frac{3}{8}$ in. bottoms.

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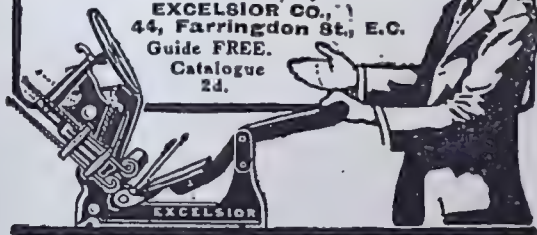
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RECENT BOOKS AND MAGAZINES.

Railway Marvels.

Within recent years much has been done by publishers to arouse a popular interest in all that pertains to railways, and Messrs. Cassell & Co., Ltd., have now issued the first parts of a new serial entitled "Railway Wonders of the World." The work, written by Mr. Frederick A. Talbot (the author of several volumes on railways and motorcars), will be completed in twenty-four fortnightly parts, price sevenpence each. The parts measure 11 ins. by 8 ins., and with each is a coloured plate and many admirable photographic reproductions. The serial, when completed, will have twenty-four coloured plates and over three hundred photographs. In the first part is a coloured view of a North British night express crossing the Forth Bridge. Fine paper is used, the type is large and clear, the work is beautifully produced, and in every way this promises to be one of the best of the serials at present appealing to the public.

The Rouen Apollo.

Among other reproductions in part 3 of "The Art Treasures of Great Britain" (J. M. Dent & Sons, Ltd., 1s. net) is a coloured plate of the Rouen faience, "Apollo," now in the Victoria and Albert Museum, South Kensington. The Rouen potteries have an interesting history, a national faience being started in 1644. Early in the eighteenth century the modestly utilitarian faience of Rouen had developed into an efflorescence of splendid decorative pieces. The most famous of these works were five life-size busts representing Apollo and the Seasons. Each was set upon a pedestal, making an effect of wonderful lustrous texture and glowing colour. This set of busts, the supreme output of Rouen, was acquired by the Duke of Hamilton and enshrined in Hamilton Place. Later the Apollo was presented to the South Kensington Museum and the Seasons were purchased for the Louvre.

Etching and Engraving.

The Victoria and Albert Museum have issued a catalogue (price one penny) of a collection of tools and materials used in etching and engraving exhibited in the museum. The collection was prepared in the Engraving School of the Royal College of Art, and the catalogue contains many interesting notes on methods and on materials. The museum possesses a large number of engravings and etchings, including a set of the "Liber Studiorum" of J. M. W. Turner. These are in the Students' Room of the department of engraving.

Sketches of Old Rye.

The April number of *The Studio* (one shilling monthly) has a delightful series of sketches of old Rye by P. Noel Boxer. The author of these charming drawings of the ancient Cinque Port was, until a few months ago, a teacher at the Blackheath Art School, and the Goldsmiths' College of Art, New Cross. The drawings, which are admirably reproduced, include The Landgate, the Mermaid Passage, the Old Hospital, the Quay, etc. The special spring number of *The Studio* is on "Old Houses in Holland," price 5s.

Wood Engraving for Colour.

Among many good things in the May *Studio* (1s.) is the article by Malcolm C. Salaman on the art of wood-engraving for colour. In these columns we have more than once recently referred to Japanese colour-prints which are now so popular; but, while the Japanese artist is never his own engraver or printer, the British artist not only prepares his own design but engraves the wood blocks and produces the prints himself. In this way the finished print is actually the work of the original artist. The article referred to is illustrated with four coloured engravings and eleven half-tone reproductions from works by Sidney Lee, Austen Brown, Allen Seaby, W. Giles, etc. The design is first transferred, in indelible ink, on a thin, transparent bank-note paper, and this is pasted face downwards (with starch paste) to the wood block. Cherry, pear and sycamore are the woods generally used. When dry the paper is glass-papered down until the lines are clearly visible on the wood. The application of a little sweet oil helps the definition. A Japanese knife is then used to outline the design, and the spaces are carved out with various sized chisels and gouges. The outline block is thus produced, and after registration marks have been cut upon it the colour blocks are prepared and cut. Powder colours are used, these being mixed with rice-paper and water. They are applied with flat Siberian hair brushes, and the printing is done by hand rubbing. Japanese paper appears to be the favourite for printing, as its long fibres will stand strong rubbing.

A prominent place in the May issue is given to the recent paintings of E. A. Walton, R.S.A., the well-known Glasgow artist, and there is a fine coloured frontispiece of his "Gipsy Camp." Another rich coloured plate in this number is a still-life study after Barent Van der Mer. Recent designs in domestic architecture are again a feature, and there is an interesting article on the dating of Japanese prints. *The Studio* varies in its appeal month by month, and the May number is particularly good.

"The Imprint."

The Imprint (one shilling monthly) continues well to appeal to those interested in printing, engraving, etc. In the April issue were several articles dealing with wood-engraving and illustration generally.

EDITORIAL NOTICES.

Contributions.—The Editor invites correspondence and original contributions on all subjects relating to woodwork and other handicrafts. All MSS. should be accompanied by a stamped and addressed envelope for return if unsuitable.

Books for Review, price lists, tools, materials, etc., sent for inspection, enquiries and all correspondence relating to the literary portion of the Magazine should be addressed to the Editor.

Editorial Address: "The Woodworker and Art Craftsman," Sardinia House, Kingsway, London, W.C.

ADVERTISEMENTS.

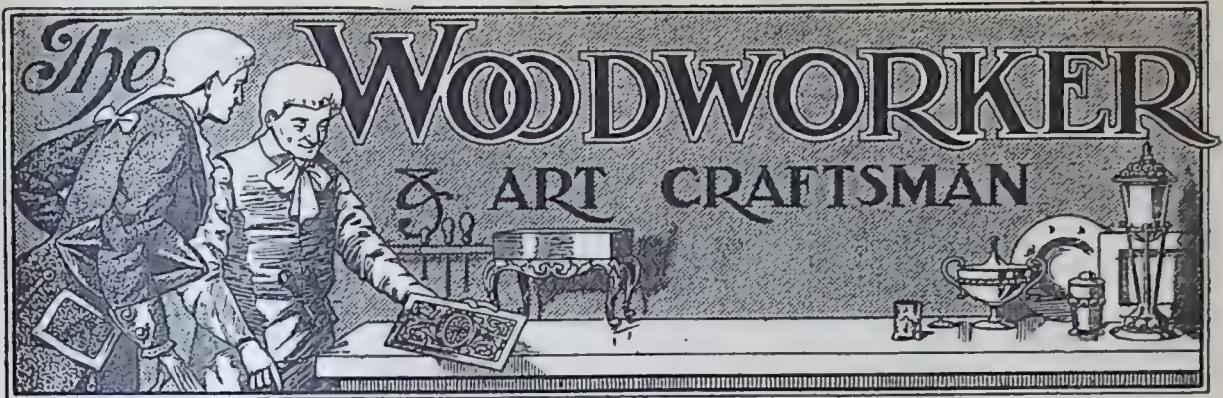
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PUBLISHING NOTICES.

Subscriptions.—"The Woodworker and Art Craftsman," with Design Supplement, will be sent post free to any address in the Postal Union for 4s. per annum, payable in advance. Remittances should be made by postal order and addressed to the Publishers.

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DESIGN FOR THE MONTH.

Carved Picture or Mirror Frame.



FIG. 1.—SIZE $33\frac{1}{2}$ INS. LONG BY $26\frac{1}{2}$ INS. HIGH. PICTURE OPENING, 22 INS. BY 14 INS.

DESIGN FOR THE MONTH.

Carved Picture Frame.

IN our Supplement for this month will be found the full size details of an elegant carved picture frame, a reduced sketch of which is given on the previous page. The size, over all is $33\frac{1}{2}$ ins. long by $26\frac{1}{2}$ ins. high. The frame is provided with carved frieze and cornice, apron piece and end trusses, and the picture opening measures 22 ins. by 14 ins. It is desirable that one of the ordinary furniture hard woods—oak, dark walnut or mahogany—should be used for the frame. A lighter substitute, if thoroughly well seasoned, is satin walnut; whilst, as an alternative, the frame may be executed in whitewood and afterwards painted white with an enamelled finish. The wood selected depends partly on surrounding furniture and partly on the picture which is to be framed, but for general purposes dark walnut is probably the most suitable.

The Central Frame.

The main central frame, upon which the other parts are built, is 26 ins. by 18 ins. The moulding is 2 ins. wide by $1\frac{1}{4}$ in. thick. The section shown on the design (see also Fig. 3) is a suitable one, but may be varied if the worker so desires. There are several stock patterns of picture mouldings which would do for the purpose, these being built up to the necessary thickness by planting an extra piece behind.

As the frame is not called upon to bear any great strain, it may be treated as an ordinary picture frame, being mitred at the corners and glued and bradded together. The brads will be hidden by the other parts. If preferred, the corners may be mitred and glued with slip feathers; or, if the section is varied, the part may be framed up with stiles and rails, like a door, and an inner moulding planted on.

The picture is held in the usual way, with glass and backboard. If the print is of the autotype character it will be framed up close, without any slip mount. If used for an etching, a white cut-out mount may be required. It may be added here that, to suit a special picture, the frame may be varied in height without alteration of the ornamental design. A change in this respect would affect only the fluted portions of the end trusses, and these could be shortened or lengthened as required. The general question of proportion must, however, be borne in mind, and anything approaching a perfect square should be avoided.

Frieze and Cornice.

Frieze and cornice together are 4 ins. deep—frieze mould $\frac{1}{4}$ in., frieze $1\frac{1}{4}$ in., and cornice 2 ins. If the cornice is built up as in section, Fig. 3 (that is, the entire upper part solid, with the ovolo mould planted on), the frieze will have to be cut $2\frac{3}{4}$ ins. deep. This is dowelled and glued to top of frame, the frieze mould being mitred

and applied. The cornice is screwed down, the screw holes being sunk and afterwards stopped. The ovolo mould is then mitred and planted on. Some workers may prefer to build up the cornice differently, and there need be no rigid rule as to how this is done.

The frieze is carved with five circular pateras, with nine flutes in the intervening spaces. At each end there are also two flutes. The correct spacing is set out on the full sized design. Care should be taken not to cut the flutes too shallow.

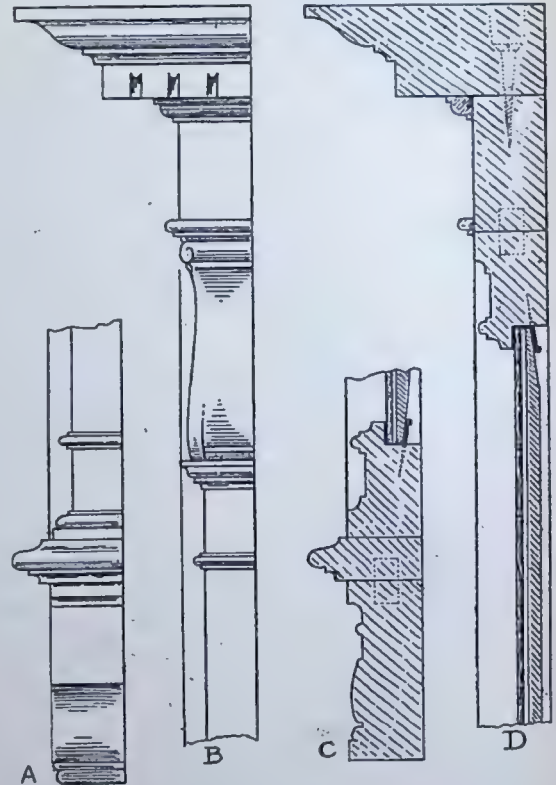


FIG. 2.—SIDE VIEW.
(A, LOWER PART; B, UPPER PART).

FIG. 3.—SECTION. (C, APRON, LEDGE, ETC.; D, CORNICE, FRIEZE, ETC.).

The square member of the cornice is shown dented, and here again the cutting should be fairly deep. The cornice will look better if the dentils are continued on the ends (see Fig. 2).

End Trusses.

It will probably be found easier to carve the end trusses in the solid, each out of a piece 18 ins. by $1\frac{1}{2}$ in. by $1\frac{1}{4}$ in. (all sizes net). They might, however, be made in sections, with the little mouldings mitred and planted on. The carving at the tops must be spirited, but not in too high relief. The small panel in the square part below may be sunk or simply indicated by incised lines. The flutes are on face only, and the leaf feature above the base is kept in low relief. No

part of the truss must project beyond the flat outer surface of the central frame.

The finished trusses are dowelled and glued to the frame; it is also advisable to dowel them to frieze and ledge.

Carved Apron Piece.

Between the frame and apron is a moulded ledge $\frac{3}{4}$ in. thick. This should be solid, the moulding being returned at the ends, and the ledge screwed to the frame from underneath. The apron, which is $3\frac{1}{2}$ ins. wide, is dowelled and glued to ledge. Or, if preferred, the ledge may be rebated on the underside to receive the apron, in which case a little extra in width must be allowed for the latter.

The carving on the apron need not be too bold, a relief of $\frac{1}{4}$ in. being sufficient for the purpose. Care should be taken to give the long sweeping lines their adequate spirit, and a purely flat treatment of the "boss" of the spirals must be avoided. On the centre feature a monogram is indicated. This is appropriate if the frame is intended as a gift; but any other emblem may be introduced, or the part may be left plain with a slightly convex surface.

Finish.

A frame in dark walnut may be darkened with oil and rubbed up to a dull finish with beeswax or ronuk. No trace of oiliness should be left.

Mahogany looks best when stained to a Sheraton colour and French polished. The carved parts should be left dull.

Satin walnut may also be French polished; or, as an alternative, it may have two coats of white polish, applied with a brush, and afterwards wax-polished. In the latter case no attempt should be made to get a very bright finish.

Oak may be fumed and wax-polished, or it may simply be darkened with one or two coats of diluted ammonia (with a little vandyke brown mixed) and then waxed.

In no case should the carving be highly polished.

If the frame is to be in enamelled white the carving throughout may be a little bolder. The wood will require four coats; first a priming of red lead, then two thin coats of white lead paint, and lastly a coat of white enamel. It is most important that the coats are thin, and that the work is thoroughly felted down after it has dried. Unless these precautions are taken the result will be far from pleasant.

Alternative Frames with Mirrors.

Instead of making use of this frame for a picture, it may effectively be employed for holding a bevelled mirror. The rebate size for the frame described will be $22\frac{1}{2}$ ins. by $14\frac{1}{2}$ ins.

Without much alteration of the design a long mirror frame, such as we show at Fig. 4, could be made. It will be seen that the second patera is taken as the centre, and working to this size the central frame will come out at 14 ins. wide—the width over cornice being $21\frac{1}{2}$ ins. If the

length of central frame is increased to 24 ins., the total length will be $32\frac{1}{2}$ ins. The daylight opening of frame will then be 20 ins. by 10 ins.—or $20\frac{1}{2}$ ins. by $10\frac{1}{2}$ ins. for the rebate size.

No alteration in the design of the cornice and frieze will be necessary in this case. The trusses will have to be 6 ins. longer, but the added length can be put into the fluted portions, thus entailing no freehand drawing. So far as the apron is concerned, the adaptation is indicated in the sketch. The full depth must be retained, but

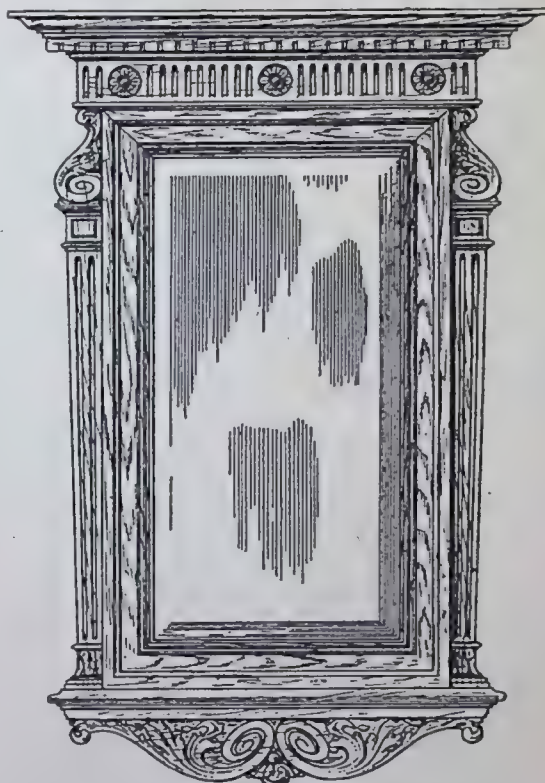


FIG. 4.—ALTERNATIVE FRAME, WITH MIRROR.
SIZE $32\frac{1}{2}$ INS. BY $21\frac{1}{2}$ INS

if the monogram and the end Greek features are omitted it should not be difficult to alter the curve to suit the space. Of course the worker is not tied down to the width suggested, and the frieze may easily be adapted either by altering the spacing of the flutes or by adding to or taking from the number of flutes between the pateras.

The ledge below might be turned into a shelf of about 5 ins. in width, but if this is done it will be desirable to increase the depth of the shaped apron and to add a central bracket.

The WOODWORKER AND ART CRAFTSMAN designs are not given away with back numbers. Additional copies may be had, price sixpence each, from the Publishers, EVANS BROTHERS, LTD., Sardinia House, Kingsway, London, W.C.

WHEELS AND WHEEL MAKING.

5.—Putting on the Iron Tyre.

THE wheel, having been finished so far as the woodwork is concerned, now requires to be shod with iron round the felloes. Frequently the tyre takes the form of a ring of iron, which is expanded by heating and placed on the wheel (when the cooling of the iron compresses the wood rim very tightly and makes

Fig. 1 shows the front of the wheel after the tyre is put on, and there it will be seen that the joints of the tyre are made to come midway between the points of the felloes; thus one will support the other.

Fig. 2 shows one of the strakes of tyre with the nail holes made, and as the making of these will be a job for the blacksmith, he should be instructed (providing he does not know already) that the holes for the nails and the nails themselves (which he will also have to make) must be made so that the latter will be a close fit in the former—the

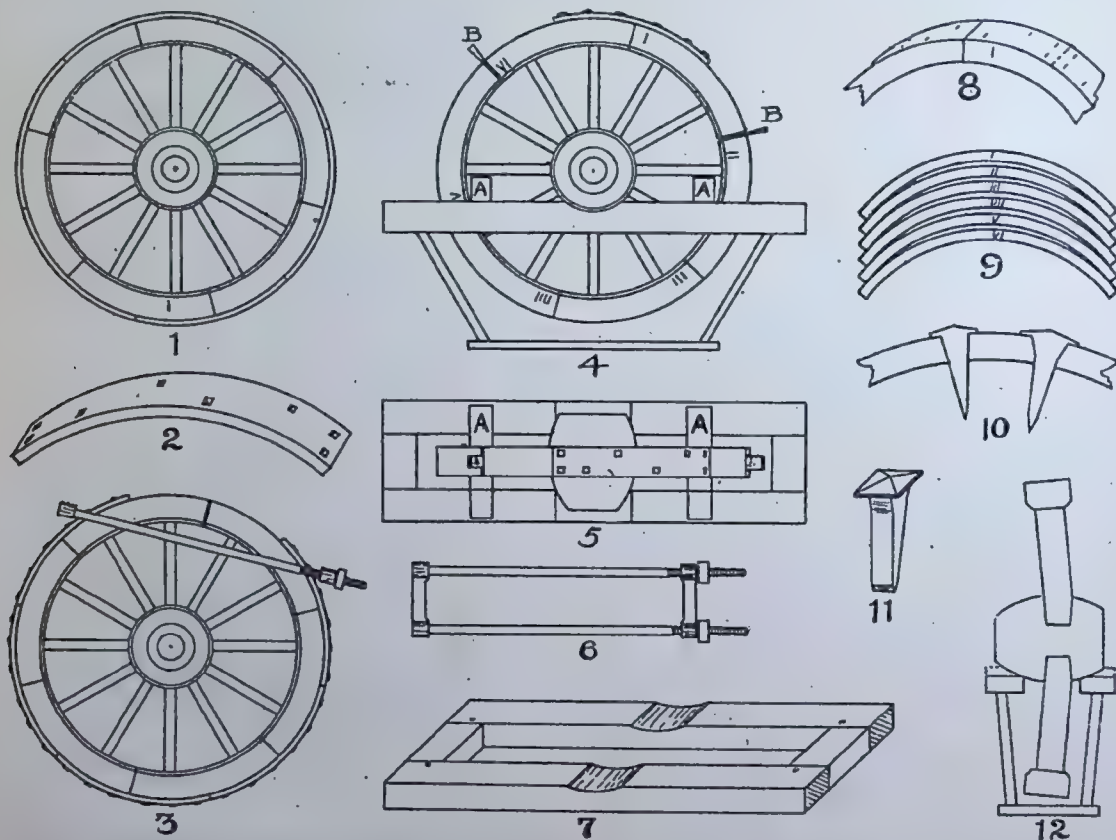


Fig. 1.—Wheel with Tyres Fixed. Fig. 2.—Tyre Strake. Fig. 3.—Cramp in Use. Fig. 4.—Wheel with First Strake Fixed. Fig. 5.—Plan of Pit, with Wheel and First Strake Fixed. Fig. 6.—Cramp for Pulling up last joint of Felloe. Fig. 7.—Frame of Pit. Fig. 8.—Felloes with Tyre marked on. Fig. 9.—Strakes Piled up for Heating. Fig. 10.—Sectional Detail showing Shape of Nail. Fig. 11.—Correct Shape of Nail. Fig. 12.—Pit with Wheel in Position.

a firm job), but an equally firm job is made by using what is called "strake" tyre. That is, instead of a continuous rim, there are as many segments of the tyre as there are felloes in the wheel, these being nailed on separately. The latter method of tyreing is the only practicable one for the amateur, the ring tyre requiring proper convenience for heating and fixing. Therefore we will try and show the way to make a successful job of the tyreing by the strake method.

holding power not to depend entirely on the head of the nail.

Fig. 10 shows a portion of the tyre, with two nails in position, either section being suitable. It is quite easy to make both the holes and the nails to any section. The former are shaped with a punch made to the same section as the nails are under the head, the latter by making them in a hole formed by the same punch.

Fig. 11 shows the shape of the nails. They

should be nearly parallel one way, and come almost to a chisel edge the other way; but not too much so, or in driving they may turn in the wood instead of entering it direct. The strakes of tyre must be bent as near to the radius of the wheel as possible, rather more straight than necessary being a lesser fault than having too much bend. In length they should be a little shorter than is required to reach round the wheel, sufficiently so to allow a gap of about a quarter of an inch between at each joint.

Each strake must be marked in position before fixing, and each nail should be started as shown in Fig. 8, where the dotted line shows the end of the strake, and the cross marks are the actual starting points of the nails. As the strakes are marked they and the felloes must be marked on the front edge as shown, to ensure getting each one in its proper position and also the right way round.

Putting on the Tyre.

For the proper tyreing of the wheel a pit is required, the top frame of which is on floor level. This brings the wheel to a convenient height for driving in the nails and, by filling with water, forms a ready means of quenching the tyre after nailing on. A section of such a pit with the wheel in position is given in Fig. 12.

All being in readiness, the strakes of tyre should be piled one on the other as in Fig. 9, the lowest number at the top, and a fire made under and around them. While they are heating, the wheel can be placed in the pit, with the No. 1 upwards as in Fig. 4. Two blocks of wood placed across the pit under the spokes (as at A) will prevent the wheel from turning, and two wedges inserted in the points at either side of the first (as at B) will drive the one which has to be dealt with first up tightly.

When the strakes are well hot, the upper one can be taken off the pile with a fork, placed on the wheel by an assistant, and guided to its correct position with the hammer. The nails are then quickly driven in, the blocks A removed, and the wheel swung round till the hot tyre is quenched by the water in the pit.

The wedges B can now be knocked out and one of them inserted in the next joint of the felloes, the blocks A put in place, and strake No. 2 fixed in the same way. This procedure is continued till five out of the six strakes are fixed, and then we are confronted with the problem as to how the last joint in the felloes is to be tightened up, there being no place to insert a wedge.

The regulation appliance is that shown in Fig. 6. This consists of the two iron side bars which are fixed into one of the end pieces and are screwed at the other ends. The movable cross piece slides on these bars, and can be tightened up by means of the nuts on each bar. Both the fixed and the sliding cross pieces have knife edges on the inside. These in use grip the heads of the tyre nails, and by tightening the nuts the last point of the felloes is pulled up closer. The method of using is shown in Fig. 3; five out of the six strakes of tyre are fixed, and the last point of the felloes is

slightly open and has to be pulled up before the last strake can be put on. Fig. 7 shows the top of the tyreing pit, and Fig. 5 shows the pit as seen from above with the wheel in position, and one strake fixed; the wedges B are here still in position.

Fixing Ring Tyres.

It may be interesting to our readers to know how the ring tyres are put on the wheels. In the first place they are welded up so that they are about half an inch too small in diameter to fit on to the wheel, and if not bent on a tyre bending machine they will require testing until they take approximately the form of a true circle. The wheel is laid face down on a circular iron plate with an opening in the centre to accommodate the projecting hub, and after the tyre is made red hot it is carried by means of tongs and dropped on to the wheel, guiding it carefully to avoid burning the felloes. In this connection comes the importance of the tyre being true to shape, as if not it will be too small one way and burn the felloes while there is room to spare in other directions. If made properly the tyre will drop on almost without scorching the felloes, and without requiring much hammering. When on in its place it should be quenched as quickly and as evenly as possible, so that the shrinkage is equal all round. Thus the wheel will not be drawn out of shape under unequal pressure.

In large establishments the platform with the wheel, is lowered into the water, thus ensuring evenness in cooling, but by using care the latter can be managed by pouring the water on.

Ring tyres are fixed on by the insertion of some half a dozen rivets through the felloes, or in some cases countersunk nails only are used.

A slight cleaning off at the point of the felloes will now be all that is wanted, and possibly a little of the scorched wood to put right. The next and finishing operation is to box, or, more properly speaking, to bush the wheel. This we will deal with in the next article.

(To be continued.)

NOTE.—The previous articles in this series on Wheel Making appeared in issues of January, February, March and May of this year, and may be obtained through any newsagent, price 3d. each, or direct from the publishers (EVANS BROS., LTD., Sardinia House, Kingsway, London W.C.), price 4d. each, post free.

Stains on the Skin.

Experiments with stains have often the annoyance of a temporary unsightly discolouring of the hands. Numerous methods of overcoming the evil have been suggested. One of the latest of these comes from a German source. A jar is placed in boiling water, and 1 ounce of white wax, cut up into shreds to facilitate melting, is placed in it. When the wax has melted, about 50 grams weight of olive oil is added, and after thorough mixing the mixture is allowed to cool. The fingers should be dipped into the mixture when it is nearly cold, and they are then protected by a thin layer of wax, which prevents the chemicals getting to the skin. The coating of wax does not interfere with the freedom of the fingers, as rubber coverings do, and the wax may easily be cleaned off with hot water and soap after it has served its purpose.

NURSERY FURNITURE.

CHILD'S CHAIR AND TABLE.

A USEFUL contrivance, well worth including in the nursery furnishings, is a high chair suitable for use at an ordinary meal table, but one which can also be taken apart to form a combined play-table and chair. Walnut, oak, mahogany, beech and birch are all suitable woods for an article like Fig. 1, although perhaps it would be preferable to make this piece of the same wood as the toy cupboard (see May number) and cradle (June number) already described, say oak, stained brown or dark fumed.

stretchers to be fitted in. The rail (C) can be allowed a piece 12 ins. long to finish $\frac{3}{4}$ in. thick by 1 in. wide on face, to be tenoned to enter well home. Both upper and lower rails should be equally spaced and mortised for the short tenons on the three back slats (D) to enter. These are 13 ins. and can finish $\frac{5}{8}$ in. by $\frac{3}{4}$ in.

Including the joint, the arms can be set out to the easy curve as shown at Fig. 3, with a width of about $2\frac{1}{2}$ ins. over scroll. Each scroll can be holed for a tie-rod, usually necessary to secure the

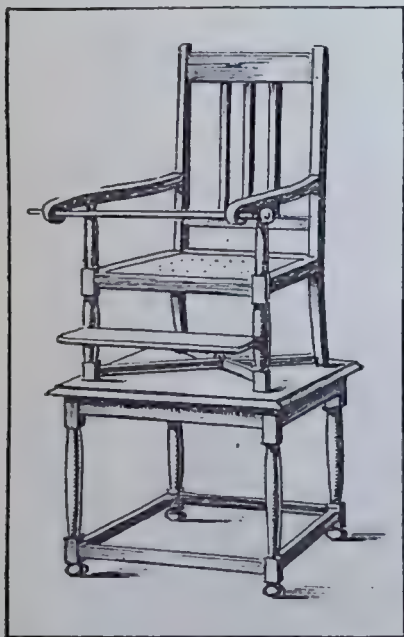


FIG. 1.—CHILD'S CHAIR AND TABLE.

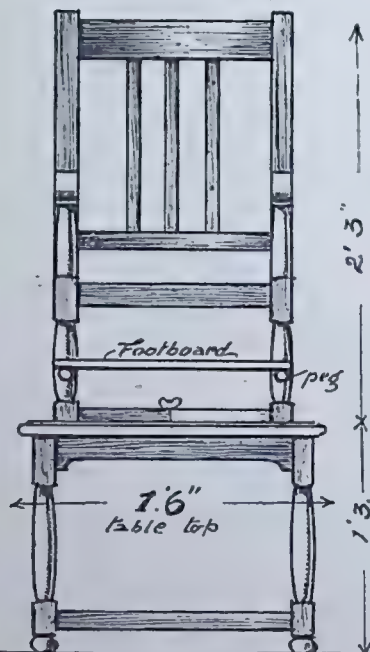


FIG. 2.—FRONT ELEVATION.

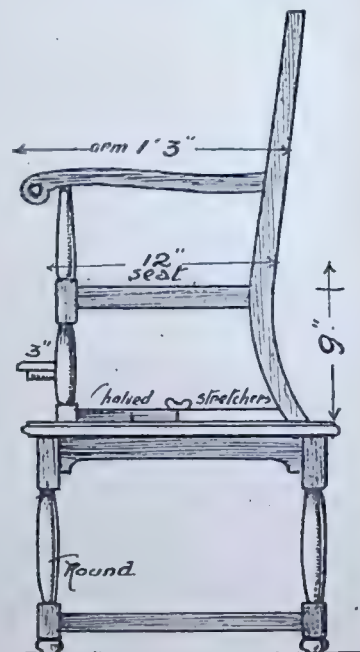


FIG. 3.—SIDE ELEVATION.

The Chair.

Proceeding to get out the stuff for the chair, the back legs (A, Fig. 4) will require two pieces (2 ft. 3 ins. full) to finish 1 in. wide on face by $1\frac{1}{4}$ in. thick, which may taper away slightly top and bottom. The rake (or pitch) of the back from seat to top would be about 2 ins., and the grain should run vertically below the seat, where the strain is greatest. The back legs will require mortising for tenons on top rail (B), lower rail (C), and seat rails, back and side (H and I), and also for the arms to enter right through and be wedged. A piece 12 ins. long by $2\frac{1}{2}$ ins. by $\frac{3}{4}$ in. will serve for the top rail, tenoned at each end. It may be cut and cleaned up out of 1 in. stuff, if to be kept flat; but the rail would give more comfort if curved, in which case 2 in. stuff can be used—to be marked out and cut at the local mill. The back legs will also be notched on the angle for the lower cross

juvenile sitter in position. Should an additional play board be desired this may be cut from a piece of $\frac{1}{2}$ in. stuff 15 ins. wide, D-shaped, about 9 ins. wide in centre. A length of stuff 1 in. wide by $\frac{1}{2}$ in. thick may be steamed to shape and glued and bradded on to the edge as a provision against things slipping off. A foot rest may or may not be necessary, according to the age of the child. If required a piece 15 ins. long, to finish about 3 ins. wide by $\frac{1}{2}$ in. thick, should be provided. It can be fixed by pinning to lengths of stout dowel, firmly fitted to the rounded portion of the chair leg in the manner indicated at G, Fig. 4; it should be notched to fit neatly between the legs.

For the front leg (F) two pieces 17 ins. long to finish $1\frac{1}{4}$ ins. by $1\frac{1}{4}$ ins. can be got out. A lathe would be preferable for finishing the rounded parts, but if the worker does not happen to have access to one he can take out the stuff above and below

the swell with spokeshave and chisel, working up to a cut across the grain to avoid splintering the square portions. A rasp and glasspaper will assist in giving a satisfactory finish. The square at F, Fig. 4, can be set off 2 ins., and the square below, footboard $1\frac{1}{2}$ ins.

Chair Seat.

For the framing of seat the front rail (H) can be $1\frac{1}{2}$ in. wide on top side, with the inner edge slightly rebated to receive the seat. The front rail can finish $1\frac{1}{2}$ in. deep, the same depth being maintained for side and back seat rails. The tenons should be carefully fitted, and may be pinned or screwed through aslant from the inner side to stiffen the holding. Fibre or three-ply seats may be fitted at a trifling cost, and are obtainable

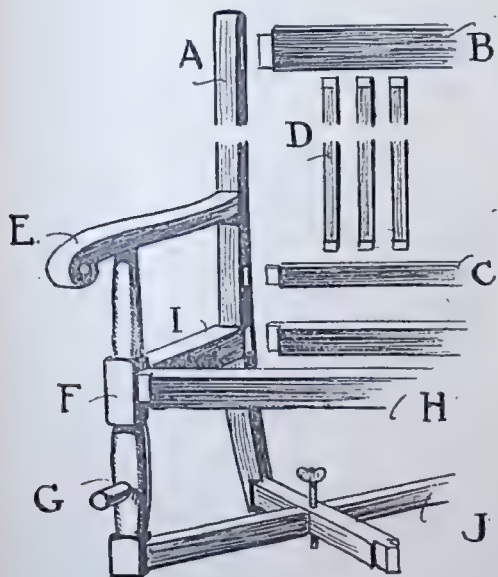


FIG. 4.—SHOWING METHOD OF CONSTRUCTION OF CHAIR.

through most oil and colour warehousemen. Or the seat can be boarded with $\frac{1}{2}$ in. wood over the seat rails, screwed on, the holes of entry being stopped with a mixture of wood dust and weak glue. The boarded seat will look best if glued up of strips of stuff about 2 ins. wide, with the grain of each reversed alternately to run from side to side of the chair, and cut to a size that will allow the seat to overlap the framing about $\frac{1}{4}$ in., front and sides. The seat should be carefully notched so that it fits snugly round the chair legs, and the projecting edges should be rounded off for comfort in sitting and finish. Width of seat in front can be 14 ins., at the back 12 ins., and from front to back 12 ins., which will give the length for the side rails in the setting out.

Screw Adjustment.

For the cross stretchers (J) a couple of lengths 20 ins. by 1 in. by $\frac{1}{2}$ in. should be got out. These

may be tenoned into the legs, or doweled, and should be cut with a shoulder to fit cleanly to the angle of the chair leg. The stretchers should be halved in centre, the 1 in. width to face upwards. In the centre the halving will be bored for the entry of a brass thumb screw to fit to the table top under. The holes of entry should be brass bushed, the lower one in the table top being tapped to receive the thread of the bolt. As the table top is then the centre of the table it can leave a block glued under to take the lower tapped bush, the block being previously holed a trifle smaller at bottom so that it prevents the bush pushing through. The brass bush or collar looks best, but an iron flange is obtainable to screw to the underside of table, the centre of the flange being holed and tapped to receive the bolt.

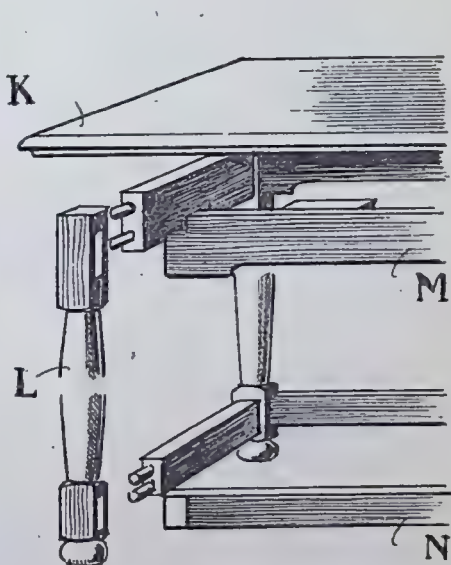


FIG. 5.—TABLE PARTS, SHOWING CONSTRUCTION.

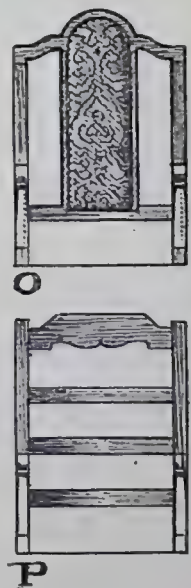


FIG. 6.—ALTERNATIVE CHAIR BACKS.

The Table.

The top (K, Fig. 5) for the table should be glue-jointed up to finish about 18 ins. by 18 ins., and can be $\frac{1}{2}$ in. thick; or, if preferred, it may be $\frac{3}{4}$ in. thick and moulded. Table is shown with a plain top, but this could be fitted with slips of $\frac{3}{4}$ in. by $1\frac{1}{4}$ in. fillet, mitred round the table edges to form a lipping as some provision against playthings slipping off. For the legs (L) four pieces 15 ins. long by $1\frac{1}{2}$ in. by $1\frac{1}{4}$ in. will be required. These will have the upper $3\frac{1}{2}$ ins. left square, below which 8 ins. can be turned (or pared to roundness as already described) up to shape with a swell in centre. Below this a square 2 ins. can be left, with the lower 1 in. as a ball foot. The square portions can be mortised for the upper and lower rails to enter, or the front and back rails can be tenoned and the side ones doweled.

The top rails (M) will require four pieces 18 ins.

long, allowing for joints and paring, and the under edge may be plain-moulded or shaped in a simple way. They should finish $\frac{3}{4}$ in. thick and about $1\frac{1}{2}$ in. wide at ends. The lower rails (N) can finish $1\frac{1}{2}$ in. by $\frac{3}{4}$ in. or $\frac{5}{8}$ in. thick, and the top edges and all outer corners can be neatly rounded off legs and table top.

Alternative Chair Backs.

By way of alternative suggestion for the chair back either of the sketches offered at Fig. 6 will work out somewhat more effectively than the plainer back shown in Fig. 1. The back indicated as stuffed (O) can have the top rail cut to shape from a board 5 ins. wide, to be dowelled down on the back legs—a rebate being cut for the pad to be tacked in. The other sketch (P) has four back rails, the upper one being shaped to accord with the canopy of one of the cradles given in June issue. The effect will be much improved if these rails are curved.

List of Parts.

		Long.	Wide.	Thick.
CHAIR.				
A	2 back legs	27"	1"	1"
B	1 top rail	12"	2"	1"
C	1 lower rail	12"	1"	1"
D	3 slats	13"	1"	1"
E	2 arms	15"	2"	1"
F	2 front legs	17"	1"	1"
G	1 foot board	15"	3"	1"
	1 playboard if required	15"	9"	1"
H	1 rail, front	14"	1"	1"
H	1 rail, back	12"	1"	1"
I	2 rails, side	12"	1"	1"
J	2 rail stretchers	20"	1"	1"
	1 tie rod for arms	18"	1"	1"
Three-ply or fibre seat, or may be caned.				
TABLE.				
K	1 top	18"	18"	1"
L	4 legs	15"	1"	1"
M	4 rails	18"	1"	1"
N	4 rails (underframing)	18"	1"	1"

The above cutting list gives all lengths full to include joints and paring, the widths generally being net finished sizes.

NOTE.—The other articles in this series on Nursery Furniture are:—Toy Cupboard (May issue), and Canopy Cradle (June issue). These numbers may be obtained through any Newsagent, price 3d. each, or direct from the Publishers (EVANS BROS., LTD., Sardinia House, Kingsway, London, W.C.), price 4d. each, post free.

Etching Grounds.

Etching grounds are generally composed of beeswax asphaltum, Burgundy pitch and gum-mastic in varying combinations and proportions according to the purpose for which they are intended. They are applied to the plates by the three following methods:—(1) hot, by means of a dabber; (2) cold, dissolved into a paste with oil of lavender, by means of a roller; (3) reduced to a liquid in chloroform and poured over the plate.

REPOUSSÉ WORK.

A Blower for a Fireplace.



HERE is an old saying:

"A smoky chimney and a nagging wife,
Make a man long to end his life!"

We say nothing here about the "nagging" wife, but the smoky chimney is not always an incurable evil.

Lately the writer had a hand in putting an end to the misbehaviour of a tiresome offender, which persistently refused to draw. By the simple arrangement here shown all that has been amended and quite a handsome ornament is added to the hearth as well.



FIG. 1.—FIREPLACE BLOWER IN REPOUSSÉ COPPER, WITH BRASS BORDER BANDS.

As originally carried out, the size was 20 ins. by 14 ins. over all, the size of the panel being 16 ins. by 10 ins. The design was worked on sheet copper (B.M.G. 10) and mounted with brass bands (B.M.G. 6). Small round-headed brass studs were fixed by a blacksmith in the sides of the iron framing to the grate and slotted holes were cut in the sides of the blower. It could thus be adjusted to cover the opening; or, if such a strong draught were not required, could be moved up to lessen the opening, additional slots being added for intermediate stages.

The Border Bands.

The brass bands are quite easy to put on, and add both to the strength and the appearance. Cut the brass in strips 26 ins. by 4 ins. and 14 ins. by 4 ins., mark a line straight down the centre of each, hold them firmly on the edge of a table

with the angle exactly on the marked line, and bend them down at right angles. It will then be simple to planish them over so as to make them lie nicely and smoothly, but if once the line is bent out of the straight it becomes ten times more difficult to get it right again.

The strips are riveted in position with soft copper studs. The slots are drilled and enlarged with files. This is preferable to sawing them, as the three layers of metal set up vibrations which break numerous saw blades. If the effect of all-copper should be preferred, the iron wire might be carried all the way round, which would do away with the necessity of any other mounting.

The Panel: Outlining.

The design consists of two animals of indeterminate species, treated in a Gothic manner, their tails being broadened out into foliage, which scrolls about in the style characteristic of the French Romanesque. The breadth necessary to the treatment of such a design will best be attained by using large tools and working throughout on wood. Before beginning see that the metal is thoroughly annealed. Having transferred the design, trace a bold line round the entire outline, going over it two or three times if necessary. In carrying out a design which includes living creatures (though grotesquely treated) the worker must constantly bear in mind that an organic structure is being represented. There must be no attempt at a naturalistic style, but a certain amount of attention to anatomy must be given. It helps this considerably if the tool is lifted and a slight break made where there is a joint. Lines which run through one another, such as the leg, where it joins the body, should be carried straight on—not all the outside lines done first and then the inside ones. When a satisfactory tracing is obtained, remove the screws which hold the panel to the wood, put a thick piece of felt between the metal and the board, and proceed to the raising of the main masses. The bodies should be highest at the four quarters and back.

Raising.

For raising these rather large subjects, wooden tools are useful and are easily made, the advantage being that they take the metal up more softly than steel ones. To make them it is only necessary to cut a suitable piece of hard wood roughly to the requisite shape, trimming off all angles and finally smoothing the face with sandpaper. Of course these wood tools soon wear down, but as the making only takes a minute or two, this does not matter much. As far as possible the tool should be worked in the direction of the bones and muscles.

During the raising, the metal should be turned over frequently to examine the other side and see how the work is progressing. Particularly must a bumpy appearance be avoided. What is to be aimed at is a general soft modelling of the subject, but so far all detail must be entirely omitted. As a contrast to the smooth texture of the animal's

skin, the leafy tails should be worked entirely in ridges, gradually broadening as required. The appearance of the foliage part should be thin.

Modelling.

When the raising has been accomplished, take the metal off the board, and reverse it; then proceed by chasing that part of the background which is near the design to sharpen the outline. A hard line is not desirable, merely a general



FIG. 2.—ENLARGED DETAIL OF ANIMAL.

clearing up. A distinction must be observed between the outlines of the animals and leafage; the former should be much softer. When the design stands out with the requisite distinctness, the attention must be turned to the modelling of the details of the body. It is obvious that if the chasing was done on the hollow metal, it would dent in and be spoilt. Take a few small pieces of pitch, just enough to fill the raised parts and put them in the hollows. Play the flame of the blowpipe over them till they melt and run together; the whole can then be reversed on the board, and the metal thus supported can be worked on as desired. Fine detail is not wanted; too much modelling of the head, for instance, would be a mistake. All that is required are a few decided lines to indicate the bony structure as distinct from the more rounded muscles. The leafage will require a general flattening as well as the sharpening up of the lines and ridges.

Finishing.

When finished, melt out the pitch and clean the metal thoroughly. Oxydise it slightly, and then rub off till the oxidation only remains in the deeper hollows. In use this method will darken to a rich bronze colour if merely rubbed without metal polish. The surround of brass should be kept bright.

A STRONG GARDEN SWING.

PROBABLY no two workers will ever make a garden swing in the same way. Much depends on the size and strength wanted, and these again have usually to be determined by considerations of cost. Some swings are larger and stronger than the one described here. Many others are much lighter; but for a swing that will serve its purpose for many years one on the lines indicated may be recommended. The height from ground level to top of bar is 19 ft. 8 ins.; the width between the posts is 4 feet, while the length for the swing will come out at a little over 8 ft.

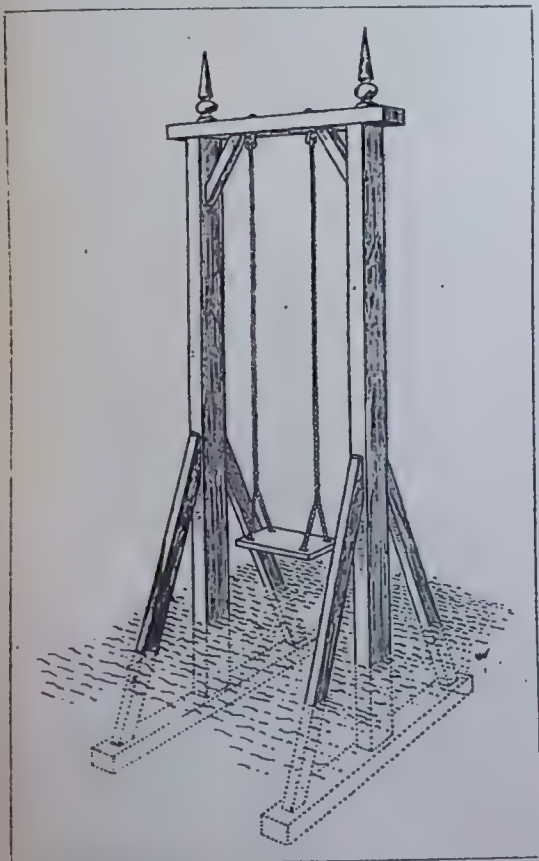


FIG. 1.—SKETCH OF TRUSSED GARDEN SWING.

An oak built swing may be ruled out of the question on the ground of expense. Of course it would last a lifetime, but red deal or pitch pine will serve all purposes, especially if the thicknesses recommended are adopted. It will be seen from the illustrations that the posts are trussed and sunk well into the ground.

The Parts.

The posts, or standards (A) are 6 ins. by 4 ins. and 12 ft. long. They should be cut 4 or 5 ins.

longer in the first instance to allow for tenons. They are mortised to take the tenons of braces C and E, and tenons are cut to enter top bar (B) and bottom piece (C). The posts are intended to be placed so that they are 4 ft. 8 ins. apart, over all, or 4 ft. between.

The top bar (B), also 6 ins. by 4 ins., is 5 ft. 4 ins. long, overlapping the posts 4 ins. at each end. The upper edges may be chamfered, and the under face is mortised to take the tenons of posts and braces. It is also bored with holes, 2 ft. apart, for the rope hooks.

The two bottom boards (C) may be 5 ft. long, by 6 ins. wide and 4 ins. thick. They are mortised to take the posts and lower braces.

For the braces (D and E) wood 4 ins. by 3 ins. may be taken. The two upper ones may be 20 ins. and the four lower ones 6 ft., allowances in each case being made for tenons. These tenons are indicated by dotted lines in Figs. 2 and 3. The braces are of course fixed on edgewise.

With regard to the finals (F) they are optional. If a stock pair of square or nicely turned ones, about 15 ins. long, can be bought from a local joiner they add to the appearance of a garden swing, but it is hardly worth while making them specially. They will be fixed on by means of their dowels, being placed immediately above the posts.

In the sketch (Fig. 1) none of the parts are shown stop-chamfered. To do this means more work, but it is a great improvement, especially when wood of 6 ins. by 4 ins. and 4 ins. by 3 ins. is used. Chamfering should be done after the pieces have been tested for fitting, but before they are fixed together.

Construction.

The standards are first made complete—that is, the post is tenoned to the bottom piece, and each pair of lower braces fixed on. These braces may have a screw at each end for additional strength.

The next operation is to dig two big holes in the ground, 2 ft. deep, to receive the trussed posts. The woodwork which is to go below ground having been previously well tarred, the standards are let in; and when it is ascertained that they are correct as regards (1) depth, (2) vertical position, (3) distance apart, and (4) line, the top bar is placed on and a board is temporarily nailed to the posts at ground level. The earth is tightly rammed in, care being taken to see that the standards remain plumb and in true line.

The top bar may then be taken off and re-fixed with its braces, each brace being strengthened with a screw at both ends. If desired, wood pins may be used instead of screws. The top, in any case, is pinned to the posts, the holes preferably being draw-bored.

With outdoor woodwork of this sort joints are sometimes given a coat of paint before fitting together. The finished swing should have two—if not three—coats of good paint, this being renewed every alternate summer.

The Seat and Rope.

For the seat a 1 in. board 22 ins. long and 9 ins. wide will do. It may be slotted at the ends for the rope to slip in, as at Fig. 4; or—a better plan—it may have holes bored at each corner and the rope passed through and spliced as Fig. 5. The edges of the seat should be rounded off. Two

Such a band is still more useful if the top bar is fixed on end, as Fig. 8—that is, with the 6 in. side vertical. The posts are slotted 6 ins. deep and 4 ins. wide to receive the bar, and the whole secured by the iron straps.

An alternative method of fixing the rope at the top is to insert ring bolts and fix hooks on the

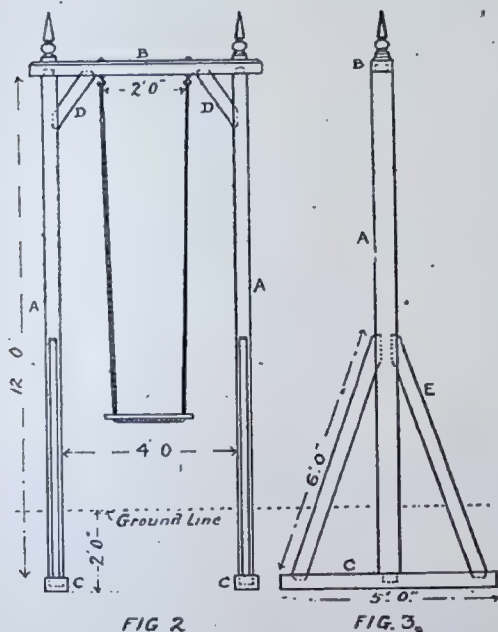


FIG. 2.

FIG. 3.

fillets (9 ins. by, say, 1½ in. by 1 in.) are sometimes nailed on underneath the seat, but this is not really necessary if the board is sound. A convenient height for the seat is about 2 ft. from the ground.

At Fig. 6 is shown the detail of top fixture—a hook, passed through the top bar and bolted. A wide washer should be placed between wood and bolt as a protection against wet. A similar washer, though not necessarily so wide, may be sunk in the underside of bar. The rope is attached by being spliced round a thimble which passes over the hook; in this way the rope does not wear by friction. It ought to be seen, however, that there is no possibility of the thimble being jerked off the hook when the rope slackens, or through any rough usage which swings sometimes receive at the hands of older children.

The rope used should be of good quality and about an inch in diameter. A couple of wire nails may be passed through it into the seat to prevent the latter from slipping.

Alternative Suggestions.

At Fig. 7 is shown a method of strengthening the top bar and standard. A 30 inch length of iron 3 ins. or 3½ ins. wide, and ½ in. or ¾ in. thick is bent by the local blacksmith and drilled for screws to form a binding as shown.

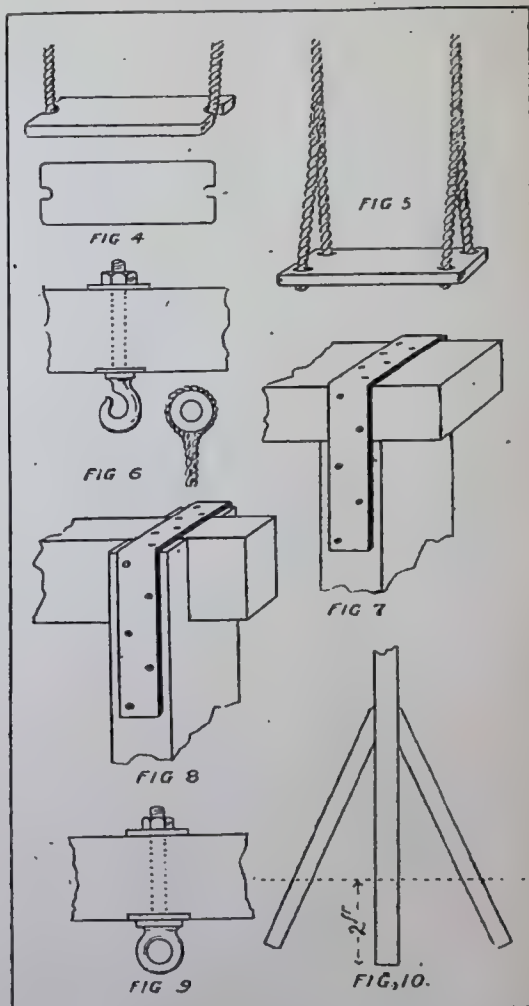


FIG. 4.—THE SEAT. FIG. 5.—ALTERNATIVE SEAT. FIG. 6.—HOOK AND BOLT. FIG. 7.—IRON STRAP TO BIND TOP BAR TO POST. FIG. 8.—ALTERNATIVE METHOD OF FIXING TOP BAR. FIG. 9.—ALTERNATIVE EYE BOLT. FIG. 10.—SHOWING POST AND BRACES WITHOUT BOTTOM BOARD.

ends of rope to engage in the eyes. The hooks will be closed at the ends so that they may not slip. (See Fig. 9.)

It may be felt by some that a swing with 6 ins. by 4 ins. standards and top bar is unnecessarily heavy for a children's swing. Heavier swings are frequently made, and if the structure is known to be adequately strong this adds to a parent's

peace of mind. It may be said, however, that with posts and top bar 4 ins. square a thoroughly secure swing may be set up. The braces in this case may be 3 ins. by 2 ins.

It should also be pointed out that fully trussed standards are perhaps the exception rather than the rule, it being more common to sink the posts and lower braces in the ground as indicated in Fig. 10. It is a good plan to case the posts which go underground with oak so that the earth does not touch the actual posts, thus giving them a longer lease of life.

List of Parts.

	Long. ft. in.	Wide. in.	Thick. in.
Seat	2 0	9	1
Fillets for Seat (two)	0 9	1 1	1
Posts (two)	12 6	6	4
Top Bar	5 6	6	4
Bottom Boards (two)	5 0	6	4
Upper Braces (two)	2 0	4	3
Lower Braces (four)	6 6	4	3
Finals (two)	15 ins or 18 ins. long and about 4 ins. at widest-diameter,		

About 20 feet of rope (say 1 in. diameter); two iron hooks and bolts; two iron thimbles.

Widths and thicknesses are given net; the lengths stated allow for tenons and cutting.

Steel-Faced Engraving.

Copper plates when ready for printing are often covered with an exceedingly thin facing of steel (or iron) by suspending them in an iron solution and passing a electric current through it. This process is fully described in the catalogue (one penny) of tools and materials used in etching and engraving, issued by the authorities of the Victoria and Albert Museum, South Kensington. The copper is covered, almost instantaneously, with a coating of hard bright iron. From three to twenty minutes may be needed to obtain a sufficient thickness of iron, according to the plate and the current employed. Many solutions containing iron may be used, but the simplest method is to fill the tank with water, in each gallon of which is dissolved 1 lb. of sal-ammoniac. A large iron or steel plate (the anode) is then placed permanently in it and attached to the positive pole of a battery (or other electric current) and a small piece of steel (generally an old file) is temporarily suspended opposite to it, attached to the negative pole, until the bath becomes sufficiently full of iron to cause a deposit on a copper plate when placed in it.

The plate to be steel-faced is suspended by a strip of copper, soldered temporarily to the back, which serves both as a support to the plate and to complete the circle of the electric current by contact with a brass rod connected to the negative pole of the battery. The quantity of the current passing must be proportionate to the surface of the plate to be steel-faced, and its intensity may vary from 1 1/2 to 6 volts. It is essential that the copper should be chemically clean before it is put in the bath, and it is necessary to remove it from the bath every few minutes to wash, and gently polish the surface with a paste of fine whitening and water, applied with a flannel, in order to keep the coating clear and bright.

The steel-facing can be easily removed when desired by placing the plate in a mixture of nitric acid and water (1 acid to 7 water), which instantly dissolves the steel, leaving the copper untouched.

Portsmouth Exhibition.

This year's exhibition of the Portsmouth and Hampshire Art Society was held in conjunction with the first annual exhibition of the Portsmouth and District Craft Workers' Guild, and remained open from May 30th to June 14th. The art section predominated, there being nearly four hundred entries. In the craft section there were about two hundred exhibits, these including a large number of beautiful examples of embroidery, lacework, etc. Miss Higgins showed a remarkable screen, Miss F. E. Giles an embroidered figure for a banner, and Miss E. V. Chivers stained window glass. Other prominent exhibitors were the Misses Blackburn, Fry, Grace, Gilman, Aron, Butler, Avent, Eckersley, Adamson and Mrs. Greene. Leather work, jewellery, examples of enamelling and metalwork were almost wholly the work of ladies. The woodwork section might have been larger, but some very fine work was shown by Miss A. Scott, Miss Chivers, Surgeon-Major Colson, and Messrs. Norton and Cox. A stall by the students of the Portsmouth School of Art Wood Carving, including panels, ornamental stands and other articles, was an interesting feature. The President of the Guild is Mr. J. W. Allison, A.R.C.A., and the Secretary, Mr. Sidney W. Cox.

Bruges and Ghent.

A fortnight's holiday in Belgium for just over £5, including all travel and board! This, we find, is being actually carried out by Daller's Tours. The whole fortnight may be spent at Bruges, with excursions to Ghent (with its great International Exhibition) and other places of interest; or, at option, one week may be devoted to Bruges, while the other is spent at Knock-sur-Mer. Second-class rail throughout is provided, and visitors stay at a comfortable high-class Pension. No such holiday could be more attractive, and we advise WOODWORKER AND ART CRAFTSMAN readers to write (enclosing a penny stamp) for Booklet No. 19 to Daller's Tours, Sardinia House, Kingsway, London, W.C. This booklet (No. 19) which we have before us, gives full particulars of this unique holiday offer, as well as others equally attractive and cheap.

Forthcoming Exhibitions.

We shall be glad if Secretaries will kindly send us early intimation of forthcoming Exhibitions.

July 2 to 18.—**Boy Scouts' Association Exhibition of Handicrafts**, to be held at Bingley Hall, Birmingham.

July 23 to 25.—**New Forest Arts and Crafts Exhibition**, to be held at the Morant Hall, Brockenhurst. Secretary, Miss N. Judd, The Rosary, Brockenhurst.

Aug. 6 and 7.—**Suffolk Art and Aid Associations' Exhibition**, to be held in the Town Hall, Eye. Secretary: Mrs. Edgar Barnes, Hill House, Eye, Suffolk.

Oct. 13 to 18.—**Sunderland Arts and Crafts Association Exhibition**, to be held at the Victoria Hall, Sunderland. Secretary, Mrs. Gordon Bell, St. Bede's, Sunderland.

Nov. 5 to 15.—**"The Englishwoman" Exhibition of Arts and Handicrafts**, to be held in the Maddox Street Galleries, 23a, Maddox Street, Regent Street, London, W. Secretary, "The Englishwoman," 11, Haymarket, London, S.W.

In applying to Secretaries for schedules and particulars, a penny stamp should be enclosed for postage.

The Woodworker Voting Competition.

PRIZES

First Prize	£1 1 0
Second "	10 6
Third "	7 6
Fourth "	5 0

BELOW is given a list of Thirty Subjects. Select the one which to you is of most interest and value, and in the vacant space at the left side put the figure "1." Place the figure "2" opposite your next favourite, "3" opposite your third, and so on, marking all the subjects in the correct order in which they interest you.

At the foot give a list of any *other* Subjects which it would be of special interest to you for THE WOODWORKER AND ART CRAFTSMAN to deal with.

Fill in and post now. The first received has the greatest chance of a Prize.

Vote Here.	Subject.	Vote Here.	Subject.
	Wood (and Chip) Carving.		Wrought Metalwork.
	Wood Turning.		Beaten Metalwork and Repoussé.
	Inlaying and Marquetry.		Bent Ironwork.
	Fretsaw Work.		Silverwork.
	Picture Framing.		Jewellery Making.
	Joinery.		Decorative Enamelling.
	Outdoor Carpentry.		Leather Embossing.
	Indoor Carpentry.		Bookbinding.
	Plain Cabinet Work.		Poker Work and Marqueterie Staining.
	Larger Cabinet Work.		Art Needlework.
	Carved Furniture.		Fine Art Work (Painting, Pen Drawing, etc.)
	Inlaid Furniture.		Manual Training.
	Upholstery.		The "Question Box."
	Polishing and Staining.		Short Illustrated Paragraphs and Notes.
	House Painting and Decoration.		The Design Supplement.
OTHER SUBJECTS YOU WOULD LIKE DEALT WITH.			

HOW THE AWARDS WILL BE DECIDED.

All the votes recorded will be counted, and the Prizes will be awarded to the Four Competitors whose lists most closely agree with the order as determined by the total number of votes given to each of the Thirty Subjects. In the event of a tie between two Competitors, the first received (according to the date on postmark) will be judged the winner. The decision of the Editor will be final.

You may fill in the particulars on this page, or, if you prefer not to cut the Magazine, particulars may be written on a separate sheet of paper.

Name of Competitor (Mr., Mrs. or Miss).....

Full Postal Address.....

State if Amateur; or if Tradesman state what craft engaged in

POST AT ONCE.—Lists, marked "Voting Competition" on top left hand corner of envelope, must reach us not later than July 15th next.

ADDRESS:—The Competition Editor, WOODWORKER AND ART CRAFTSMAN,
Sardinia House, Kingsway, London, W.C.

A HANGING BOOKCASE.

WHILE designed more particularly for the young or less experienced craftsman, the article shown here is one which will be found generally useful, especially in a small sitting room where books of reference require to be handy, and where a few drawers for stationery and other papers are wanted. It is simple to construct, but when well made it is the kind of article that sells.

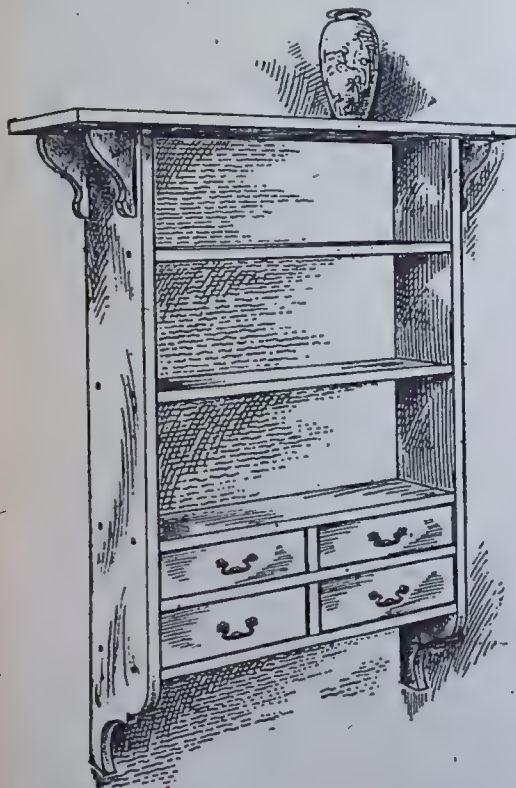


FIG. 1.—HANGING BOOKCASE, WITH DRAWERS.

Size 3 feet over top, by 3 ft 6 in. high.

THE DESIGN.—The bookshelf is a hanging one, suitable for a recess, for placing above a mantelpiece, or indeed for any part of the room. In length it is 3 ft. 6 ins. over all. The width over the top is 3 ft., and the width over carcass 2 ft. 3 ins. It combines a bookcase and nest of drawers. The former has three spaces, 8½ in., 8 ins. and 7½ ins. respectively, being thus convenient for the ordinary run of crown 8vo and post 8vo books. The upper drawers are 3 ins. deep, the lower ones 3½ ins., the widths being 12½ ins. The top has a projection of 4½ ins. at each end, with neat bracket supports.

MATERIAL.—Unless the bookcase is to be made in one of the furniture hardwoods—say oak or dark walnut—the question of finish must be

considered beforehand. Yellow deal is easily worked, and is suitable if the article is to be varnished, or painted white either matt or with an enamelled finish. If to be stained to imitate oak or walnut, American whitewood should be used. An oak case, wax-polished, or fumed and waxed, will make a handsome ornament, and is strongly recommended as affording the best recompense for one's labours. Dark walnut or mahogany might also be used, however, if the question of matching surrounding furniture is a consideration.

The Parts.

ENDS.—The gables (or ends) are 3 ft. 5½ ins. long, this allowing for a ¼ in. tenon to enter underside of top. A width of 7½ ins. and a thickness of ¾ in. will be ample. The inside face of each end will be grooved to receive the five shelves. (See Fig. 2 for sizes.) These grooves, which are ¾ in. wide and ¼ in. deep, run right out at the back, but at the front are stopped ¾ in. from the edge. In this way the front edge of end presents an unbroken line. The shaping at the foot is done with a pad saw, or keyhole saw, the edges being carefully cleaned with the spokeshave. The extreme end is left square in order that the bookcase may, if so desired, rest on a mantelshelf or cabinet.

TOP.—The top is 3 ft. long, 8½ ins. wide and ¾ in. thick, thus overhanging 1 in. at front and 4½ ins. at each side. It is grooved on the underside to take the tenons of the ends, but is otherwise plain.

SHELVES, ETC.—The five shelves (including the division between the drawers) measure 2 ft. 1½ ins. between the gables, but as each is to be housed at both ends an extra ½ in. must be allowed—that is, the end projections are ¼ in. As indicated at Fig. 3 the tenons stop ¾ in. from the front to correspond with the grooves in the gables. As the shelves come flush with edge of gables they are the same width, 7½ ins., and are also ¾ in. thick.

The three lowest shelves are grooved to take the upright partitions between the drawers. The lowest is grooved in the upper side only, the next is grooved on both sides, while the third is grooved on the underside only. The grooves will be ¾ in. wide, ½ in. deep, and will be stopped back about ¾ in. from front edge.

The upright partitions, ¾ in. thick by 7½ ins. long (grain vertical) will have ½ in. tenons similar to those already described to enter the shelves as just mentioned. As the spaces between the drawers are 3 ins. and 3½ ins. the height of partitions will thus be 3½ ins., and 3¾ ins. respectively.

BRACKETS.—The four top brackets (Fig. 5) are 5½ ins. long, 3 ins. wide and ¾ in. thick.

DRAWERS.—These will not be made until the article is otherwise ready for putting together. In this way there is little likelihood of a misfit. The drawer fronts should be ¾ in. thick, the sides and backs ½ in., and the bottoms either ½ in. or 3/16 in. In length and width the fronts must fit snugly into the spaces provided for them. The

sides are grooved to take the bottom, and are dovetailed to the front and back in the usual way. Drawer parts are shown at Fig. 6, but it is always advisable for the younger worker at least to have a good example of a drawer in front of him when cutting the joints.

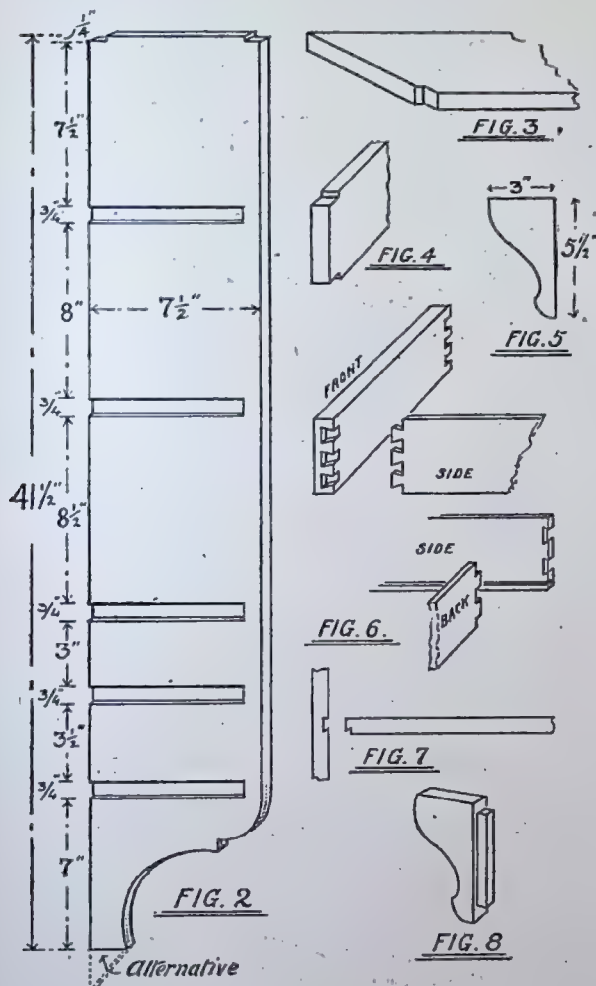


FIG. 2.—GABLE. FIG. 3.—SHELF. FIG. 4.—DRAWER PARTITION. FIG. 5.—BRACKET. FIG. 6.—DRAWER PARTS. FIG. 7.—DOVETAIL-GROOVE JOINT FOR SHELVES. FIG. 8.—TENONED BRACKET.

As the drawers will look best if set back $\frac{1}{2}$ in. from face of ends and shelves they may be made, only 7 ins. deep over all. Stops should be glued to the shelves to prevent the drawers from going back beyond the $\frac{1}{2}$ in. suggested. Locks are unnecessary on such small drawers, but neat handles, preferably oxydised, should be provided.

Construction.

Much of the construction has already been indicated in the description of the parts. The five shelves are glued and housed to the ends.

They should all (with the exception of the division between the drawers) be screwed from the outside. Round-headed brass screws may be used; or flat-headed screws may be taken and either covered by little turned wood buttons glued on, or sunk and the holes afterwards stopped.

The top is glued to the ends and also screwed from above. The back brackets are fixed flush with the back edge of gables, and are glued and screwed from the inside. The front brackets, which may be fixed in the same way, are set back $\frac{1}{2}$ in. from front edge of gables. The drawers, already completed separately, are merely placed in position.

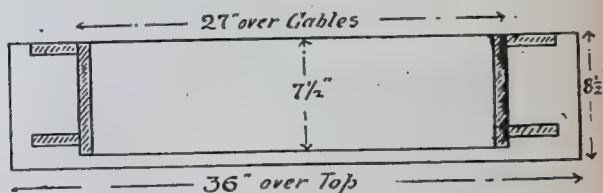


FIG. 9.—PLAN SHOWING TOP, GABLES AND BRACKETS.

As such a bookcase, when fully furnished, is very heavy, care must be taken to secure it firmly to the wall. If it can rest on a mantelshelf or other fixture this is a great help; but four strong brass plates should be provided, two at the back of the lowest shelf, and two on the gables near the top.

List of Parts.

	Long. ins.	Wids. ins.	Thick. ins.
Ends (or gables) ..	41 1/2	7 1/2	1 1/2
Top ..	36	8 1/2	1 1/2
Shelves (five) ..	26	7 1/2	1 1/2
Drawer Partition ..	3 1/2	7 1/2	1 1/2
Ditto ..	3 1/2	7 1/2	1 1/2
Brackets (four) ..	5 1/2	2	1 1/2
Drawer Fronts (two) ..	12 1/2	3 1/2	1 1/2
Ditto (two) ..	12 1/2	3 1/2	1 1/2
Drawer Sides (four) ..	6 1/2	3 1/2	1 1/2
Ditto (four) ..	6 1/2	3 1/2	1 1/2
Drawer Backs (two) ..	12 1/2	2 1/2	1 1/2
Ditto (two) ..	12 1/2	2 1/2	1 1/2
Drawer Bottoms (four) ..	12 1/2	6 1/2	1 or 1 1/2

Four drawer Handles and Four Brass Plates.

The above sizes include joints, but are otherwise net. In ordering wood allowance must therefore be made for cutting.

Alternative Suggestions.

An alternative and more workmanlike method of construction is to dovetail-groove the top and bottom shelves to the ends. (See section, Fig. 7.)

The brackets, instead of being screwed, may be tenoned in position (See Fig. 8), or they may be dowelled.

If the bookcase is made in deal, to be painted, it is well to use American whitewood for the drawers, deal not being quite suitable for small dovetailing.

Should there be no intention of making the bookcase stand on a mantelshelf, the lower shaped ends may be improved by adding 2 ins. to the length as indicated by dotted lines on Fig. 2.

MANUAL TRAINING.

A Magazine Rack.

THE magazine rack shown at Fig. 1 is a useful model for giving practice in planing and in the mortise and tenon joint. It will be seen that none of the parts are small, and the base and the rails are of such a length that care must be taken to get them free from winding.

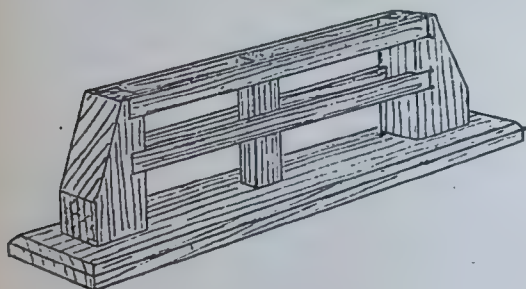


FIG. 1.—USEFUL MAGAZINE RACK.

The base is 21 ins. by $3\frac{1}{2}$ ins. by $\frac{1}{2}$ in., finished sizes. The uprights should be cut from a length of 2 in. square stuff, a piece 15 ins. being long enough. The centre piece is $1\frac{1}{2}$ in. square, and may be cut from a length of $1\frac{1}{2}$ in. square stuff, allowing about three or four inches longer than necessary for planing. The rails are $15\frac{1}{2}$ ins. long, either $\frac{1}{2}$ in. or 1 in. wide, and $\frac{3}{8}$ in. thick. They are let in the full thickness to a distance of $\frac{1}{8}$ in. from the edge. The tenons

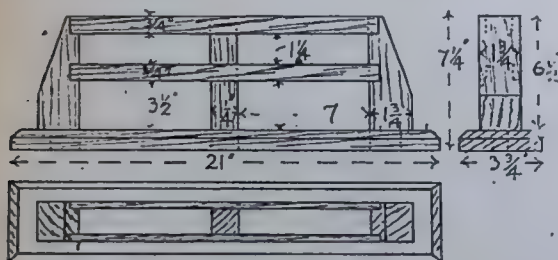


FIG. 2.—ELEVATIONS AND PLAN OF RACK.

should be cut as suggested by the dotted lines (Fig. 2) and top edges of base chamfered. There should be no need to use anything but glue to secure the parts together, and if the work is carefully stained and polished the result will be a really useful piece of table furniture.

The Lathe in the Manual Training Room.

It is only recently that any real departure has been made from the ordinary type of model, but every teacher of Manual Training is now anxious to take advantage of the latitude allowed in formulating their own particular course of work. One of the most striking departures is the introduction of the lathe, particularly the pole lathe. Credit for this must be given to Mr. J. A. Willis, who has designed the simple pole lathe shown in the accompanying illustration. The lathe is now to be seen in many Manual Training

centres in London, and excellent results are and have been achieved.

The construction of the lathe is so simple that any advanced boy could easily undertake the work, and the fact that it would be possible to fit it to the kitchen table at home will give it an additional interest. The uprights should be of 2 ins. by 2 ins. stuff, and the spring composed of lengths of $\frac{1}{2}$ in. by 5-16 in. ash. A length of leather belting will be needed for the lower part of the string, but any strong cord will do for the upper portion. No Manual Training room should be

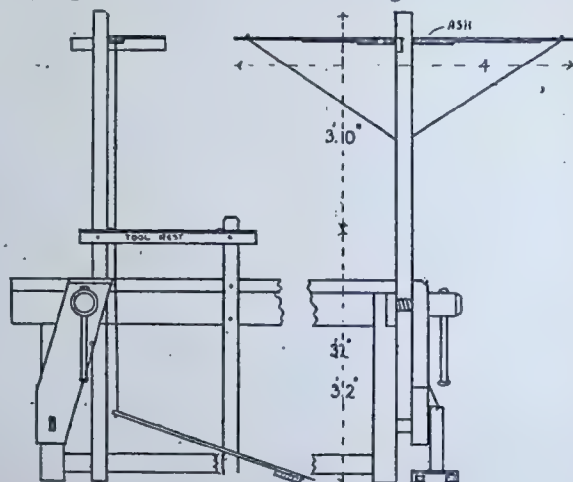


FIG. 3.—A POLE LATHE.

without one of these lathes, and it will only be necessary for the teacher to make one for it to be copied wholesale.

It must be understood that the pole lathe cannot compete with the ordinary lathe for turning large articles, or for doing the work quickly. It is only on the down stroke of the pedal that a cut can be taken, but it is surprising to the uninitiated to see the good work that can be done on such a simple machine.

Manual Training Teacher's Certificates.

A correspondent writes: "I wish to personally express my thanks to you and your contributor for the notes given previous to the Manual Training examinations of the City and Guilds of London Institute, and the solutions which appeared in this month's (June) issue. There seems to be a sort of prophecy in the notes as regards the questions, and for my own part I have greatly benefited."

We are aware that many readers appreciate the notes and solutions we offer on the Teacher's Certificate examinations, and with these we have always endeavoured to be first in the field. Last month we gave the two questions put in the First Year's Practical Woodworking examination, and the three questions—with solutions, fully illustrated—put in the First Year's Drawing examination.

In the present number will be found the Literary Test for First Year candidates, and the Final Practical Woodworking (illustrated) and Written examinations.

Next month we will give full particulars of the Drawing questions in the Teacher's Final, with illustrated solutions. The Final examination this year was a stiff one, especially question 3, and we hope to deal with it fully.

Final Examinations for Teacher's Certificate.

(City and Guilds of London Institute.)

Practical Woodworking.

INSTRUCTIONS.—The Candidate must write his examination number as on his card, on each piece of woodwork. At the close of the examination he must put together the various pieces which form the exercise, and make a parcel of his work by fastening the separate exercises together with string. Those tools only may be used which are specified on the list circulated. Four hours allowed for this part of the examination.

N.B.—Accuracy of craftsmanship will be the chief consideration in awarding marks. *No glass-paper or files may be used.*

QUESTION 1.—From the piece of wood of dimensions 22 ins. by 2½ ins. by 1½ ins., make the exercise as shown in the drawing.

QUESTION 2.—From the two pieces of wood, whose dimensions are 17 ins. by 3 ins. by ¾ in., and 8 ins. by 1½ ins. by 1½ ins., make the exercise as shown in the drawing. The end at A only need be worked to shape, and chamfered on the outside edge with 2½ in. chamfer as indicated in the drawing; the end at B may be left square.

NOTE.—Dimensions and spacing for the lapped dovetail joints in this exercise are not indicated in the drawing; these are left to the judgment of the Candidate.

Written Examination.

INSTRUCTIONS.—Candidates must carefully write their card examination number on the yellow form and answer paper. The number of the question must be placed before the answer in the answer paper. The maximum number of marks obtainable is the same for each question. All sketches should be carefully drawn. Candidates must satisfy the examiners in both Part I and Part 2; about the same time should therefore be devoted to each section of the paper. Four hours allowed for this examination.

Part I.

Question 1 is to be attempted by all Candidates, and not more than three other questions in Part I.

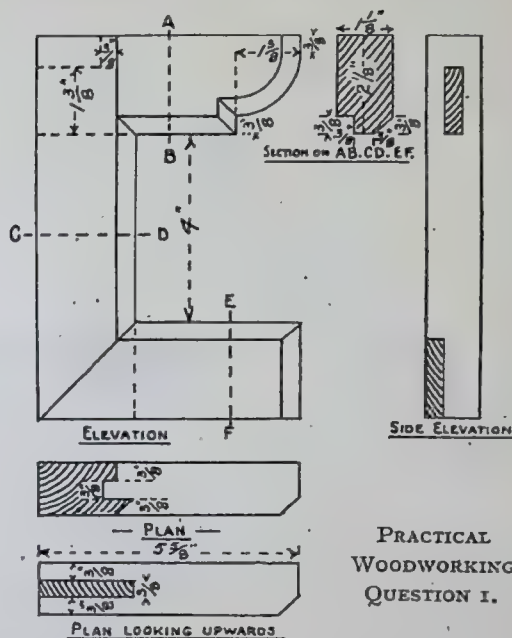
QUESTION 1.—In the event of your being asked, by the Education Authority employing you, to send in a supplementary requisition for additions that you may desire added to the equipment which your workshop already contains, make out the said supplementary requisition, filling in prices of the items and the purposes for which you require them.

QUESTION 2.—Indicate the order in which you would introduce the following tools into your course of instruction:—

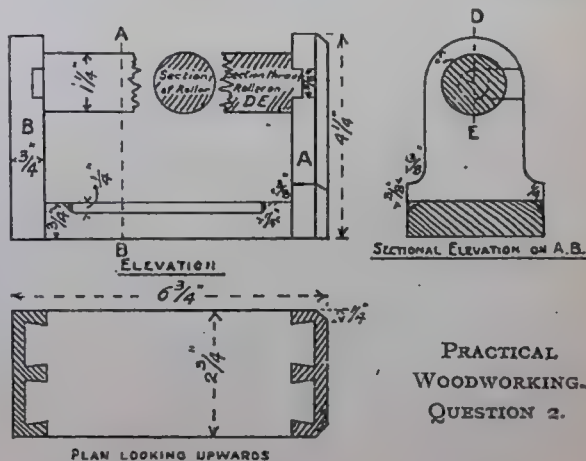
(a) Spokeshave, (b) gouge, (c) plane, (d) chisel, (e) saw, (f) hammer. Give reasons for the order you adopt, and sketch the forms of these tools which you consider most suitable for use by your pupils.

QUESTION 3.—Classify those tools in your workshop which illustrate the principles of (a) the screw, (b) the lever, and describe how you would demonstrate to your pupils, by the construction and manipulation of

these tools, the mechanical principles involved in their makes and uses.



QUESTION 4.—Describe, as you would to a class of pupils, the historical development of the hammer and the axe. Give in addition sketches such as you would use as blackboard illustrations. You may avail yourself of authorities on these developments, but an original treatment of the subject from your own point of view will serve better the purposes of this examination paper. It must be distinctly understood that this description is to be given as to a class of pupils, and must be framed to interest as well as to instruct them.



QUESTION 5.—Describe the means taken for the preservation of woodwork:—

(a) Outdoors, (b) indoors. Describe the processes of "wood-finishing" by which not only the preserva-

tion but the improved appearance of woodwork is attained.

QUESTION 6.—Sketch in oblique projection the six joints most needed in woodwork and give comments on their applicability to those constructive purposes which are most suitable as manual training problems.

Part 2.

Question 7 is to be attempted by all Candidates, and not more than three others in Part 2.

QUESTION 7.—Write notes for a lesson on any one of the three following subjects, stating the average age of the pupils you have in view, the time to be given to the lesson, and the previous knowledge you assume your pupils to possess:—

- Three typical English trees.
- The uses and abuses of files and glass-paper.
- The bench-screw or vice, with special reference to the mechanical principles involved in it.

QUESTION 8.—Explain the terms "expressional" and "disciplinary" as applied to exercises in woodwork. State and justify your views upon the relative importance of expression and discipline at different stages of the course in woodwork.

QUESTION 9.—State, and illustrate by examples, the principles which would guide you in selecting exercises in woodwork which are not intended to be correlated directly with other subjects of the curriculum.

QUESTION 10.—What do you understand by *didactic* and *heuristic* methods of teaching? Illustrate by examples their respective places in the teaching of woodwork.

QUESTION 11.—Many courses of "Handwork for the lower standards" include "light woodwork." Give examples of exercises which *should* and of exercises which *should not* be included in these introductory courses, explaining why you would include or exclude them.

QUESTION 12.—Give a brief account of the rules of class-management, which you would adopt so as to secure good order and efficiency in your lessons.

First Year's Examination for Teacher's Certificate.

Literary Test—Scheme B.

INSTRUCTIONS.—Candidates must write their card examination number on the yellow form and answer paper. The answers must be written in ink. 1½ hours allowed for this test.

QUESTION 1.—Write a letter to a friend telling him that you have entered for the First Year's Examination in Woodwork, why you have done so, and how you prepared yourself.

QUESTION 2.—Describe briefly the place in which you live, mentioning its principal industries and the facilities for education.

QUESTION 3.—Say what you think on *one* only of the following subjects:—

- The value of mathematical knowledge.
- The training and experience desirable for a manual instructor.
- The use and abuse of alcohol.

THE present volume of THE WOODWORKER AND ART CRAFTSMAN commenced January, 1913. All back numbers are available, price 4d. each post free. Annual subscription in Postal Union, 4s. post free. EVANS BROTHERS LTD., Sardinia House, Kingsway, London, W.C.

Home Arts and Industries Association.

THE promenade gallery of the Royal Albert Hall (South Kensington) is an excellent place for an exhibition. All the stalls are equally well situated for showing their goods, and nothing is likely to escape the eye of the attentive visitor. Here, on the last four days of May, the Home Arts and Industries Association held their summer exhibition, the opening ceremony on the 28th being performed by Queen Alexandra.

Woodwork, etc.

The stalls numbered over a hundred, handicrafts and industries from all parts of the country being represented. Two stalls were devoted to Queen Alexandra's Sandringham Technical Schools, one with woodwork, the other with metalwork, embroidery, lace, &c. The work was as usual of a high order. Several dainty articles of furniture in satinwood were shown, these including a specially fine Sheraton inlaid cabinet with barred doors. Other work was carried out in walnut or mahogany, the examples of carving being good. The skill of the students at these Schools is remarkable, but more than a passing word of praise is due also to the instructors under whom they work. Excellent woodwork was also shown by Mrs. Leopold de Rothschild's Ascott class. The exhibits here included neat tables, whatnots, bookshelves &c., some in grey sycamore, also examples of wood carving, chip carving and inlaying. Other woodwork exhibits were shown by the Ashbridge, Bermondsey, Cromer, Fulham (toys, &c.), Gowrie Labour Home, Mayfield, Ratcliff, Sheringham, Stepney, Vale of Clwyd (toys), Wadhurst, and Winslow Societies. There were also good examples shown by isolated workers. The popularity of inlaying is on the increase, and some of the exhibits from Cromer were very fine. Capital open carved work was shown by the Mayfield Association.

Metalwork and Needlework.

There was a large display of metalwork, chiefly beaten brass and copper. The Sarum wrought iron-workers showed a large double gate in wrought iron, also screens, fenders, fire irons, &c., of excellent workmanship. We could well wish that more of this kind of work were taken up by craftsmen. The Rev. Iden Hart, of Rainsbury, exhibited some very good water jugs and trays in beaten brass and copper made by young lads under his own direction. From Parkstone, Newton, Kingston-on-Thames, Keswick, Highgate, Holyhead, Heversham, Five-mile-Town and Southwold also came good metalwork. Mr. W. Tooke, of Southwold, had an exhibit of silverwork.

As usual there was a large display of embroidery, plain and fancy needlework, lacework, tapestry, linens, carpets, rugs, Shetland woollens, network, samplers, spinning, weaving, homespun and tweeds, knitting, macramé work, smocking, &c. Of raffia and basket work, too, there was a fair show. Toys were also to the front, the stall of the disabled soldiers and sailors (Portsmouth) being very attractive. Leather work was shown by the Misses Jockel and by the Leighton Buzzard, Sudland and Waifs and Strays Associations. Several beautiful examples were shown by Miss Bassett and Mr. P. Burgess, and the Ruskin Pottery was greatly admired.

AN IMPROVED PARALLEL VICE.

A Useful Bench Contrivance.

A LARGE number of wood-workers will no doubt have experienced great difficulty in purchasing or constructing a wood vice which would remain parallel to the bench front when in use. No matter how well seasoned the timber or how carefully made, the vice will in course of time pull in towards the bench front at the end remote from where the work is inserted. The accompanying sketches give particulars of a contrivance which can easily be made and attached to any wood vice by an amateur, and which the writer claims will entirely counteract the above defect.

Making the Adjustment.

The sketch (Fig. 1) shows a wood vice with the contrivance attached, and Fig. 2 is a section taken longitudinally through the vice when in position. To make the same it is necessary to have cast in brass or iron a ratchet as shown (part) in Fig. 3. The metal should be $\frac{1}{4}$ in. thick and about $\frac{5}{8}$ in. wide, with the notches $\frac{1}{2}$ in. deep and not more than $\frac{1}{2}$ in. from point to point, a blank space being left at each end with a countersunk hole for screwing same into position. The best way to have this made is to have it cast from a hardwood pattern made with $\frac{1}{4}$ in. space between the points of the notches. The casting will then (on account of contraction) be slightly less than $\frac{1}{2}$ in. from point to point. The ratchet should be as long as the maximum width of the opening of the vice, and should be sunk flush into the vice guide or runner as shown in Fig. 4 and secured with a small screw through each end.

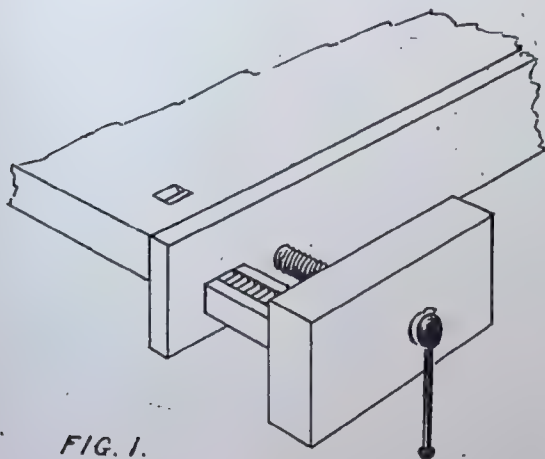


FIG. 1.

AN IMPROVED PARALLEL BENCH VICE.

Then prepare a key from a piece of iron (or steel preferably) about 3-16 in. thick as shown (part) in Fig. 5, the bottom end of which should be filed so as to fit into the notches of the ratchet both as regards width and bevel. The key should be of such a height that it will not project above the bench top when rising over the notches of the ratchet, and if a hole is bored near the top of the key it will afford a better grip for the fingers. Having made the ratchet and key, cut

a mortise through the bench top as far as the guide or runner, bevelling off the top of the mortise on side remote from bench front as shown in Fig. 2, so as to admit of the insertion of the fingers. The key should fit fairly tightly, only allowing sufficient play to admit of its rise and fall.

Working the Vice.

In working the vice, first lift up the key and screw up. Now, when opening the vice again, the key will rise and fall over the ratchet until the worker stops unscrewing, and immediately the vice is screwed up

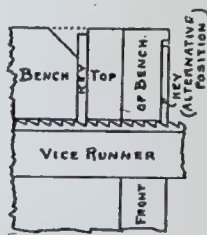


FIG. 2.

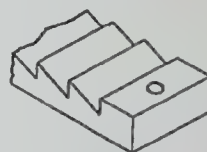


FIG. 3.



FIG. 5.

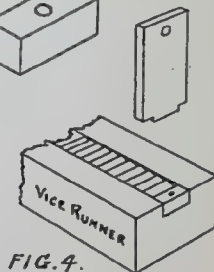


FIG. 4.

DETAIL OF PARTS

to clutch the work the end remote from the work is automatically locked and is bound to remain rigid. The contrivance is thoroughly practical, and it is really surprising how little manipulation the key requires. For instance, supposing the worker is using the same piece of wood, or wood of the same thickness for some time, the key only requires adjusting once for such thickness, because the unscrewing of the vice sufficient to admit of the removal of the work does not move the key from its proper position; or, in other words, the vice can be opened almost $\frac{1}{2}$ in. without moving the key out of its proper notch for the particular thickness of work in use.

In screwing up the vice to adjust for narrower work hold up the key with the fingers and screw up the vice about $\frac{1}{4}$ in. more than is necessary. Then drop the key. The unscrewing of the vice to insert the work will then automatically adjust the key to its proper notch.

In case the worker does not wish to cut the bench top, the key might be sunk into the edge of the bench as shown by the alternative suggestion in Fig. 2, and held in position by metal bars (sunk flush with the bench front) across the front. It must be pointed out, however, that it is not easy to adjust the key when placed in the last position if working with narrow timber, because it might be difficult to get the finger between the bench and the vice in order to adjust the key, and in any event a hole in the bench top can easily be filled up again if desired.

Hard Pine.

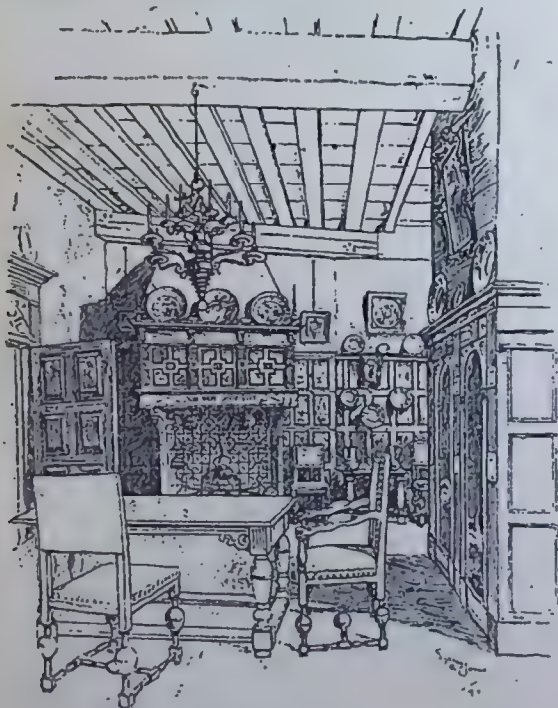
Yellow pine is naturally regarded as a soft wood, but some of the dry, long-leaf product that comes into the planing mills is practically as hard to work and to penetrate as an oak board.

RECENT BOOKS.

The Old Houses of Holland.

"OLD HOUSES IN HOLLAND," written and illustrated by Sydney R. Jones: special spring number of *The Studio*, edited by Charles Holme; 11½ ins. by 8 ins. 5s. net. ("The Studio," Ltd., 44, Leicester Square, London, W.C.).

While the value of this volume necessarily lies chiefly in the illustrations, Mr. Sydney Jones' descriptive text is essential for an adequate appreciation of the interest attaching to the old dwelling houses of Holland, with their charming interiors. With fully illustrated books there is always a tendency to pass over the letterpress, as if it were of minor importance, but in this case the reader will miss much if he neglects the few pages devoted to an outline of the development of domestic architecture and its interior woodwork.



SEVENTEENTH CENTURY ROOM, DORDRECHT.
(Reduced from Full Page Illustration in "Old Houses in Holland.")

In treating of these "Old Houses," Mr. Jones divides his volume into three sections:—(1) architecture—principally domestic; (2), exterior features, such as gables, doors, windows and ornaments; and (3), interior fittings and decorations. In previous special numbers of *The Studio* the illustrations have been from photographs. Here they are from pen drawings by the author—work which represents much patient labour, not only in preparation, but in the collecting of material. In all there are over a hundred and seventy of these sketches (many full page) from Mr. Jones' pen. From a purely pictorial point of view a few may suffer from having been reproduced unnecessarily large, but if this is a fault it has at

least the advantage of making the detail clearer to those who make some practical use of the illustrations. Mr. Jones has a confident, but delicate touch, and in constructive pencil work as in pen drawing his knowledge of perspective is sound. We have searched in vain for any trace of the ruling pen. All lines, even on the most severe buildings, are drawn freehand, and while no detail suffers the general effect is enhanced. Many of the drawings must originally have been made to a large size and the reproduction is excellent. It may be added that, apart from these pen sketches, there are twelve coloured plates, including two of enamelled earthenware tiles and two of 18th century Delft dishes. As a picture, "The Mirror" (from an oil painting by Catherine Bisschop-Swift) is one of the finest examples of colour printing we have seen for some time. Several of the coloured Dutch interiors are also singularly fine.

Dutch Characteristics.

Of course it is in the older towns of Holland that the true architectural expression of the Dutch people is chiefly to be found. In Holland perhaps more than in any other country architecture was associated with everyday events and developed out of domestic as well as civil life. Dutch towns have a peculiar interest because of their rivers, canals and numerous bridges, but it is the existence of a quaint old-world atmosphere that emphasises their charm. Amid other changes the steeply-pitched gables, the red roofs with their dormer windows, the iron vanes, the slim tapering spires, the belfries and the windmills remain; these are what attract, and their fascination never fails. The prominence given to exterior doorways was always a feature of Dutch architecture, and several interesting illustrations of these are provided. Window heads, wooden shutters, barge boards, fascia boards, gable ends, finials, carved stone panels, mosaic bands, iron wall ties, vanes and door furniture, lead spout heads, &c., are also characteristic details which receive attention.

One might wish that the plan of the volume could have permitted of more space being devoted to the section on interiors, as it is here that much of the richness of Dutch art creeps in. Heavy and solid, these interiors were planned for use and permanence. The massive ceiling beams, supported by corbels, the high panelling, the carved oak doors, the tall fireplaces, the wrought metal-work fittings, the brass candelabra and the substantial furniture are familiar to all who have visited Holland. The illustrations are of interiors as a whole rather than of separate articles of furniture, but in the former an excellent idea of fireplaces, tables, chairs, &c., is obtained. Altogether, to woodworkers, architects, artists and to the general reader *The Studio* and Mr. Jones have done a service in preparing this volume.

Handwork in Schools.

"THE SERVICE OF THE HAND IN THE SCHOOL." By Woutrina A. Bone; crown 8 vo., illustrated, price 3s. net. (Longmans, Green & Co., 39, Paternoster Row, London, E.C.).

The authoress is a lecturer in the University of Sheffield, and approaches the subject of handwork in schools with a due sense of its limitations as well as of its value. Her volume is largely a record of what has been done, and is thus based on practical experience. There is an introductory section dealing with the value of handwork, the service of the hand in

the progress of the race, and the three types of workmen: the labourer, the craftsman and the artist. And in this latter connection a warning is thrown out as to the danger of teaching handwork in a way that is calculated to produce nothing worthier than the labourer. The practical record is full of useful advice, and, although there is a little touch here and there of the "lecture" style, this is never so obtrusive as to mar the concise instruction offered. The illustrations, of which there is a liberal supply in both colour and line, are by T. B. Winter and M. Steen, and are admirable in every way. The book is one for handwork teachers, and to all such it may be recommended with every confidence that it will be found helpful.



SEVENTEENTH CENTURY ROOM, FRIESLAND.
(Reduced from Full Page Illustration in "Old Houses in Holland.")

Light Woodwork and Handywork Generally.

"WOODWORK," by Percy A. Wells. "HANDYWORK," by W. Graystoke. The Hobby Book Series, edited by Archibald Williams. Fully illustrated. 1s. each net. Thomas Nelson & Sons, Paternoster Row, London, E.C.

Messrs. Nelson's "Hobby Books," of handy pocket size and strongly bound in cloth, are a useful series. Mr. Wells, who writes on "Woodwork," is an old contributor to THE WOODWORKER, and is the author of more than one of our sixpenny handbooks. In the present volume he deals with popular woodwork in a practical manner, illustrating the text with over four hundred diagrams. Wood, tools and materials are dealt with, and the various woodworking joints

explained. Outdoor carpentry is then taken up, and articles of household furniture described. There is a final chapter on finishing—staining, polishing and painting. To those who wish a concise and practical little guide to woodwork generally the volume may be recommended.

Mr. Graystoke's companion volume on "Handy-work" covers a wide range of all kinds of odd indoor and outdoor jobs. To detail its contents here would be impossible, but the variety of information which it contains may be gauged when we mention that such subjects are dealt with:—Plumbing, glazing, lacquering, riveting, repairing of all sorts, remedying leaks, fitting electric bells, making fountains, sundials, barometers, &c., boot repairing, cycle repairing, and all other odds and ends. The book is illustrated with over two hundred diagrams, and all the instructions are of a practical character.

Railways of the World.

"RAILWAY WONDERS OF THE WORLD," a serial in twenty-four fortnightly parts. Parts 3 and 4; 11 ins. by 8 ins., price 7d. net each. (Cassell & Co., Ltd., La Belle Sauvage, London, E.C.)

This serial increases in interest as the fortnightly parts appear. The great Canadian-Pacific railway is now under review, and the large photographs—admirably reproduced on good paper—add greatly to the value of the work.

A Pencil for Woodworkers.

A careful craftsman always plans out the work he contemplates beforehand, by making drawings and diagrams of all details. In the care that is bestowed on these drawings often depends the excellence of the completed work, and it is essential that everything that contributes towards accurate diagrams should be taken advantage of. A first-class pencil will be found invaluable to the woodworker, and the finest pencil for the purpose that we know is the "Koh-i-Noor," made by Messrs. L. and C. Hardmuth. Very special care is used to obtain the purity of the graphite, which entirely obviates the slightest scratchiness, the pencil gliding smoothly and evenly over the surface of the paper. Another special advantage of the "Koh-i-Noor" pencils is their durability, for one will easily outlast many ordinary pencils. For drawing, for writing, and in fact for any purpose for which a pencil is used, we know of no better than a "Koh-i-Noor." They can be obtained from all high-class stationers.

Stipple Engraving.

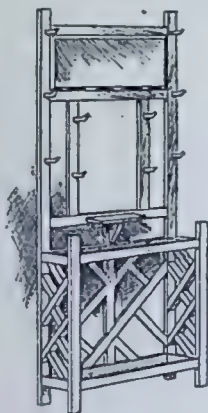
In stipple engraving the work is done by an elaborate series of dots, carefully arranged with reference to the planes and modelling of the subject. The dots are usually marked with the needle through a ground, and bitten with the acid, and are afterwards added to and deepened with the burin. The burin for stipple is bent *downwards*, this being obviously the best shape for "pecking" into the dots. In line engraving the burin is curved upwards at the point. In some stipple engraving both bitten and cut lines are used in conjunction with the dots.

Chalk engraving is a coarse kind of stipple, the dots being made to imitate the character of the grain of a chalk drawing; the work is sometimes done partly by soft ground etching and partly by roulettes and punches of various kinds.

OLD-STYLE HALL STAND.

THE hall stand shown in sketch and detail here is made in a severe style, being entirely without ornamentation. At the same time it is a style which suits the modern old-fashioned house so much in vogue at the present time.

The size, as shown, is 6 ft. 6 ins. high by 2 ft. 6 ins. wide, the projection being 12 ins. The whole of the main framing is 2 ins. square. The construction is with mortise and tenon joints throughout, the tenons passing quite through the wood in every case, held together with wood pins. Beyond making all parts fit closely, no attempt is made to hide the constructional details, end grain showing where it comes. The front elevation is shown in Fig. 1, while Fig. 2 is the side elevation, and Fig. 3 a sketch of the complete back part.



SKETCH OF HALL STAND.

To construct, the two uprights should be placed together and set out for the whole of the necessary mortises, as in Fig. 4, squaring them across the edges and gauging as required. Besides the four mortises in each upright to take the cross pieces, other two mortises will be wanted in each post to take the short side stretchers, which will connect the front frame to the back. At Fig. 5 is shown one of the uprights with the mortises made ready for putting together.

The rails (cross pieces) should all be placed together and set out in a like manner. All four will be alike as regards the tenons to fit into the posts, but the second from the top will require two mortises, to take the two short uprights; the next one below will require three mortises and will appear as Fig. 6 when finished, while the lower one will require one mortise only.

It may be mentioned that *The Woodworker Handbook*, "Woodwork Joints" (7d. post free), gives full particulars as to the joints required for such an article.

The lengths of the short uprights will be taken from the mortises in the uprights, and will be as Fig. 7 when finished.

Before the back frame is put together, the two upper rails and the uprights between the upper mortises must be rebated to take the mirror, which will fit in as shown in Fig. 8.

The front frame, without the filling, is shown in Fig. 9, one each of the uprights and rails, with mortises and tenons made, being shown in Figs. 10 and 11.

The front and side rails at the top of the front frame, also the whole of the bottom rails, will come in contact with each other, and as they must all come through the wood the best way to manage them is to pierce one and reduce the other in width at each corner, as Figs. 12 and 13. The reduced tenon will have to be made out in width by gluing in extra pieces at each side after the parts are together.

The complete filling for the front is shown in Fig. 14, the parts being seen at Figs. 15, 16, and 17. The fitting together is quite simple, the shoulders all being at right angles. The short pieces should be left long enough so that, after the whole is put together, the

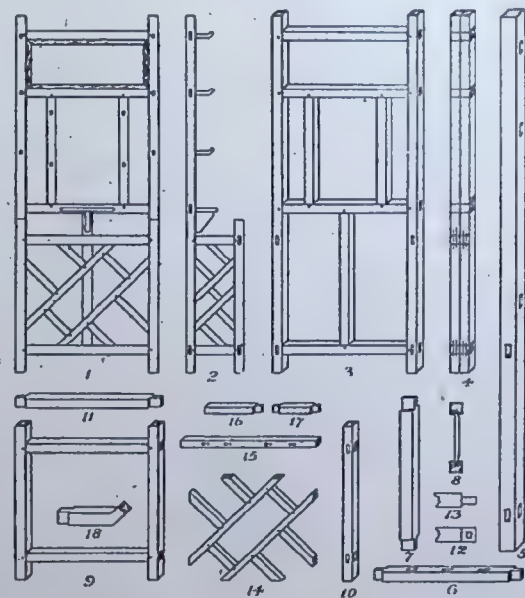
complete filling can be laid on the stand, marked exactly, and cut off so that it will drop in, when a brad through each piece into the frame will fix it.

The filling in of the sides will be done in the same way, the only difference being in the length of the pieces. In both front and sides the diagonals should be placed at an angle of forty-five degrees.

One of the hat pegs is shown at Fig. 18. These should be tenoned into the uprights and fixed with glue, assisted by a screw into each from the back of the stand. A small shelf, with bracket under, should be fixed as shown, the easiest way being to screw through from behind.

A zinc tray should be fitted so as to rest on the lower rails all round; or, if preferred, it may stand on the floor under the stand. The former is the neater way.

In the making of this stand a point should be made of preserving the square corners, this being one of the special characteristics of the style. For this reason soft wood is not suitable. Preferably the whole of the wood should be genuine old oak, such as may often be obtained in pulling down old buildings. This has a colour peculiar to itself; it should not be stained or polished in any way, simply oiled with raw linseed oil, well rubbed in.



FIGS. 1 TO 18.—DETAILS.

- 1, Front Elevation. 2, Side. 3, Back Frame. 4, Long Uprights, set out. 5, Long Upright, mortised. 6, Second Rail from Bottom, mortised and tenoned. 7, Short Upright, tenoned. 8, Method of fitting Mirror. 9, Front Frame. 10, Front Uprights, mortised. 11, Front Rail, tenoned. 12, Tenon pierced for other tenon. 13, Tenon reduced in width. 14, Front Filling. 15, Long Rail of Filling. 16, Short Outside Rail. 17, Central Rail. 18, Hat Peg.

Failing the genuine old oak, new English oak may be used, darkening it with ammonia fumes, or allowing it to darken itself naturally. Or another alternative is to use wainscot oak, and darken it sparingly with old oak matsine, or stain made specially for the purpose. But, however carefully this is done, the imitation is not so good as the real wood; the colour is not bad but the grain is wanting.

HISTORIC MOULDINGS FOR THE WOODCARVER.

ALTHOUGH one travels back to the Egyptians for the first traces of mouldings, one finds that those early craftsmen used the simple forms, fillet, hollow and bead, at the top of their buildings—more especially the bead moulding, which was used alone in a manner peculiarly their own, thus creating a distinctive style. These simple forms were also used by the Persians and Assyrians in a less individual manner.

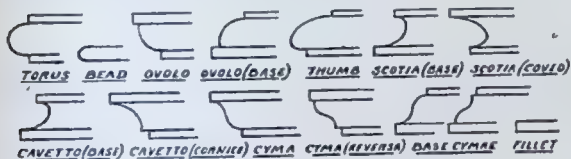


FIG. 1.—ARCHITECTURAL MOULDINGS.

The Greeks developed mouldings to a high standard of perfection and stamped their style on every succeeding style. The Greeks often painted their ornament on the mouldings, particularly on the egg and tongue ornament found on the ovolo. The Romans used mouldings in a more vigorous manner than the Greeks, but without that delicacy and refinement so characteristic of their predecessors. Classic mouldings were looked at from below; the Gothic, which followed, was viewed from all points and angles.

The early English style in architectural mouldings was plain, but during the decorated period they were ornamented. Lastly came the mouldings of the Renaissance, first the Italian and later the French. The French cabinet makers in the reign of Louis XVI. introduced delicately enriched brass mouldings on their furniture.

Various Mouldings.

Mouldings may be divided into four divisions:—

1. Convex surface—Torus, bead, ovolo, reversed ovolo and thumb.
2. Concave surface—Scotia and cavetto.
3. Mixed surface—Cyma recta and reversa.
4. Flat surface—Fascia and fillet.

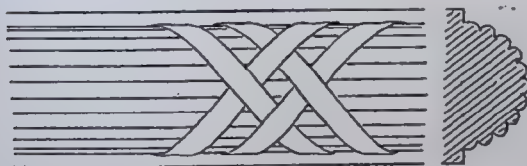


FIG. 2.—TORUS, ORNAMENTED WITH BANDS.

These terms may be briefly described:—

Torus, a large moulding, used below the eye, can be carved with bands, leaves and reeds.

Bead, the same section as the torus, but smaller and used to separate larger mouldings in groups of mouldings. It is generally carved with "beads."

Ovolo, or quarter circle, always used above the eye. When used on a base the moulding is reversed.

Thumb, not found in architecture, but much used by cabinet makers on the edges of tables, &c.

Scotia, a large concave moulding, used on bases, and rarely carved.

Cavetto, used above the eye and reversed on bases.

Cyma recta and reversa, called by cabinet-makers *ogees*, can be used both above and below the eye; often carved with leaves having strongly marked veins.

Fascia, a big flat surface, used when contrast is required; seldom carved.

Fillet, a small flat surface, never carved, used to divide other mouldings in a group of mouldings.

The Uses of Mouldings.

Mouldings were generally used together in groups. By cabinet-makers they were placed together in cornice or base of chests, &c., as dividing and protecting panels, and are found in picture frames, on doors and on edges of furniture.

The entablature of the Greek architects (the entire top ornament of the buildings) was composed of cornice, frieze, and architrave.

In using a cornice it should be borne in mind that its place is on the top of buildings or pieces of furniture, and projects; therefore the mouldings used should be cymas, cavetto and ovolo, with a fascia for relief, not necessarily decorated.

The frieze is always a fascia and is never divided by any other moulding. Under this comes a number of mouldings, never less than three, which compose the architrave.

For base mouldings torus or scotia is used (sometimes a reversed cavetto) and finished with a fascia or flat. Ornament on cabinet maker's mouldings should not hide the form, but is added when required.

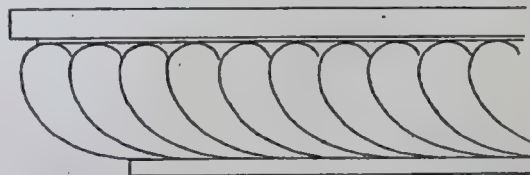


FIG. 3.—THE CADROON—ITALIAN MOULDING FREQUENTLY SEEN ON CHESTS OF 15TH AND 16TH CENTURIES.

to balance either ornament. Plain mouldings are often used for the purpose of contrast or for repose.

The whole entablature is too much for the cabinet maker's use, so the cornice is taken alone for furniture. How it is decorated will give an insight into styles aimed at and the nationality of the carver.

Aquatint.

Although this method is often called "engraving," it is really etching by tones, for all the graving is done by acid; there are, or need be, no lines. The plate is partially protected by specks of resin or asphaltum, and between these specks the acid bites, giving the plate an ink-holding capacity. Owing to the fineness of the dots or grain, a proof from an aquatint plate appears to the eye like a wash drawing. The forms and tones are obtained by "stopping-out" as in etching. The natural tendency of aquatint is to render the subject in flat tones, but these can, to some extent, be modified during the biting, and afterwards with the burnisher. There are many ways of producing an "aquatint ground" for the partial protection of the plate, the two most important being the resinous dust ground, and the spirit ground.

THE QUESTION BOX.

Illustrated Replies to Readers' Queries.

The principal object of **THE WOODWORKER AND ART CRAFTSMAN** being to help its readers, questions of general interest dealing with any branch of handicraft will be answered on this page.

As it is impossible to reply fully in these columns to all queries received, questions on subjects within the scope of this Magazine are replied to by post under the following conditions:—
(1) Questions dealing with distinct subjects should be written on different slips, on one side of the paper only, and the sender's name should be written on the back of each. (2) Questions should be accompanied, wherever possible, with fully dimensioned sketches, and correspondents are recommended to keep a copy of their Questions for reference. (3) A stamped addressed envelope (not post-card) should be enclosed. (4) Questions will be answered as early as possible after receipt, but when sketches have to be prepared, or when research has to be made, a short interval must elapse before the Reply can be forwarded. The insertion of Replies in this column cannot be guaranteed, but all Replies of general interest will be given when space permits. All Questions should be addressed to The Editor, **THE WOODWORKER AND ART CRAFTSMAN**, Sardinia House, Kingsway, London, W.C.

NOTE.—With each Query must be sent a "Question Box" Coupon. (See page 3 of Cover).

Polishing Oak Table.

[391] W. E. M. (Birmingham) has stained and polished an oak table, but finds that the surface remains dull. He describes the work and asks for advice.

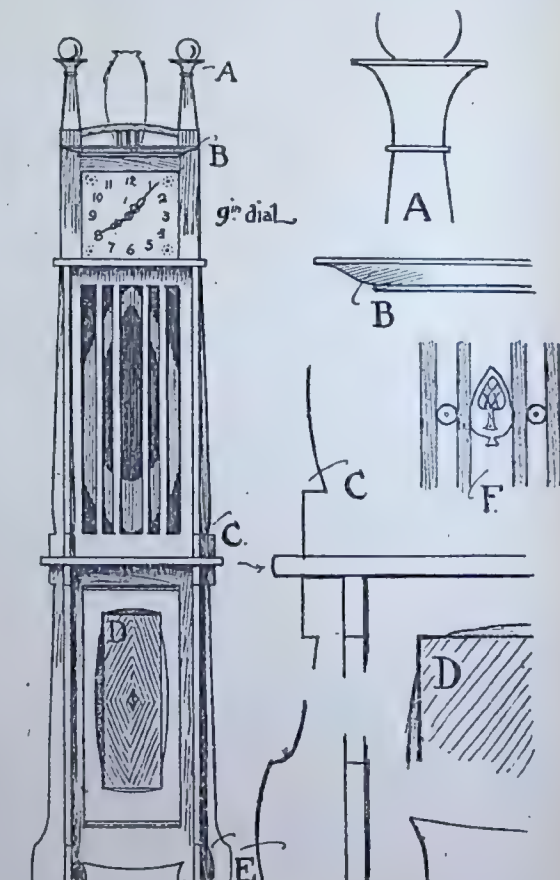
REPLY.—Perhaps you did not fill the grain properly, or the wood may have been damp or the polish chilled, or the polish may be of poor quality. We are inclined to think, however, that you must have used too much oil in the process, causing the polish to sweat. For the filler you can procure the American variety already coloured at 1s. per tin at most polish warehouses, mixing to the proper consistency with turpentine. Or you can use plaster of Paris and water, coloured with yellow ochre, umber, or vandyke brown as required. Many use tallow with the plaster, but this wants mixing in the proper way, and it may be as well for you to leave out grease as far as possible, scraping off the plaster and water whilst damp and rubbing down after. If you desire to finish the oak its natural colour fill in and polish with white polish. If you use a tinted filler polish with button polish. For staining the best to use are powdered water stains, and a mixture of brown and green stains may give you an effective colouring. Rub down with 1½ glass paper if the grain rises. Let the stain dry thoroughly; then rub over with a little linseed oil, afterwards giving a coat of polish to fix the stain. Oak is a "thirsty" wood, and if a really good finish is desired it must be carefully filled in and due time must be given to polishing. Have you the **WOODWORKER** handbook on "Polishing and Staining" (7d. post free)? A little polish on the rubber goes a long way, so it should be used sparingly, and the oil must be regarded throughout only as a vehicle to spread the polish and only a little used.

Hall Grandfather Clock.

[392] J. R. (Hamilton) writes: "Having made an oak hall stand some time ago, I am now desirous of making a hall clock case to match. I enclose drawings of hall stand and suggested front elevation of clock. Could you give me some advice regarding top, dial, front, &c.? Could lower front be made a cupboard?"

REPLY.—The accompanying sketches may be of help to you. For the top we would suggest tapered

terminals (A) with ball above, whilst at B is a three-membered mould returned with chisel in the solid. This rail can be repeated at sides. You will require a 9 in. dial to the clock, say a beaten copper dial with plain numerals. If you desire a wood dial the hour figures can be fret-cut from ebony and be glued and pinned in position. Or the hours can be of nickel with the edges blacked. The lines of the buttresses



HALL CLOCK CASE (No 392.)

at C and E can also be eased as shown, and the framed panel at D could be shaped as indicated. The panel might be quartered, with an inlaid black and white diamond in centre, and a wooden dial plate could receive some similar treatment. You cannot have a cupboard at D if you use a movement with weights, as these require about a 4 foot drop. You could, however, have a cupboard here if you use a movement with spring instead of weights. The spars or uprights in the body of case can be ¾ in. wide, and if desired some such feature as that indicated at F could be introduced as a break. We presume you will fit glass to this part. The depth back to front can be 12 ins. or 14 ins., including all front projections. The side elevation can follow the lines of front by having an oval of black and white chequered inlay or an applied panel to match. For construction of grandfather clock cases, see articles in issues for October, 1907 (3d. post free), and November, 1911 (4d. post free).

Couch and Settee.

[393] T. W. (Sunderland) writes:—"I have a set of chairs, and should like to make a couch or sofa to suit. The sketch enclosed shows what the chairs are like. There is no ornamentation except an inlaid piece at top, and they are made of mahogany. Could you oblige me with sketch and dimensions?—I can manage all the jointing and setting."

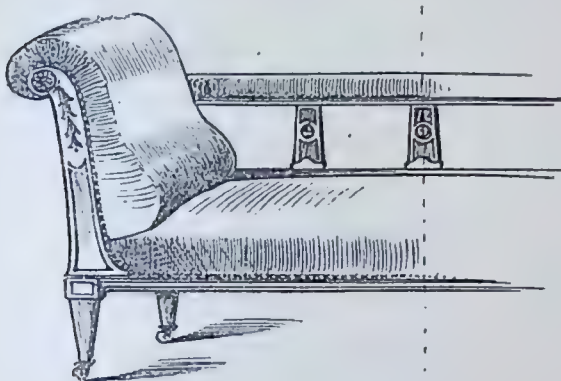


FIG. 1.—Couch (No. 393).

REPLY.—The couch or sofa you wish to make could be worked out on the lines of Fig. 1, the matching up as indicated being by way of the carving on scroll head, with legs and back panels to match those of the chairs, three backs in all. The framework can be of beech or pine, faced up with mahogany in the short wood parts. The scroll head can be made separately

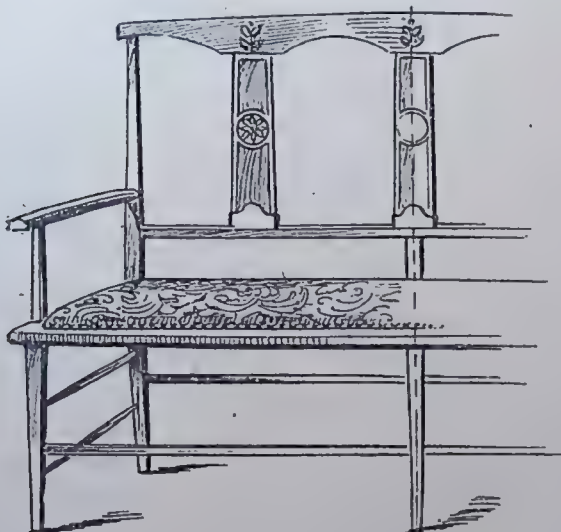


FIG. 2.—SETTEE (No. 393).

to dowel on to the seat frame. The stuffing scrolls and top rail can be of 1 inch stuff and lower rail 2 inch by 2 inch, stubbed into the scrolls. A terminal post may be fitted to couch back, $1\frac{1}{2}$ inch wide, and a shaped bracket $4\frac{1}{2}$ inches wide added as a finish, tenoned or doweled together and into seat frame. The top rail of back, tenoned to post and halved and screwed to the corner head, may be $\frac{3}{4}$ inch thick, with a 2 inch stuffing

rail laid on top of pine $\frac{3}{4}$ inch thick. The lower rail, also $\frac{3}{4}$ inch, is tenoned to terminal post. Or, instead of the terminal post, the couch may have a similar head to the one shown, but made lower so that the arm may rest upon it comfortably. Length of frame may be 5 ft. to 5 ft. 6 ins. long over all; height of scroll (frame), 2 ft. 4 ins.; height of seat rail less castors, $10\frac{1}{2}$ ins.; height of top back rail about 22 ins. Sketches for a similar couch to this appeared in issue for January, 1912. We may add, however, that a couch is not usually supplied with the type of chair you describe. It is replaced by a settee which is much lighter in construction, and we think you will probably prefer this. We offer a rough suggestion for same, which should prove of assistance (Fig. 2). Length, 3 ft. 9 ins. to 4 ft. 6 ins. as preferred; depth, back to front, 19 ins. to 20 ins.; height of seat, 17 ins.; height of arm, 26 ins.; height of back, 39 ins. in centre, curving down to 37 ins. at ends; back legs, $1\frac{1}{4}$ by $1\frac{1}{4}$ in.; back framing, $1\frac{1}{4}$ by $1\frac{1}{4}$ in.; seat framing, $2\frac{1}{2}$ ins. by $1\frac{1}{4}$ ins. face; arm, 1 in. by $1\frac{1}{4}$ in.; all finished dimensions; legs (three back and three front), $1\frac{1}{4}$ in. by $1\frac{1}{4}$ in., tapered to $\frac{3}{4}$ in. by $\frac{3}{4}$ in., with front, back and stretcher rails to match chairs. A couch such as Fig. 1 would be upholstered with a spring head and swell and a spring seat, the upper rail being also stuffed up firmly. If you experience any difficulty in regard to this part of the work, the Woodworker handbook on "Practical Upholstery" (7d. post free) will give you all needed information.

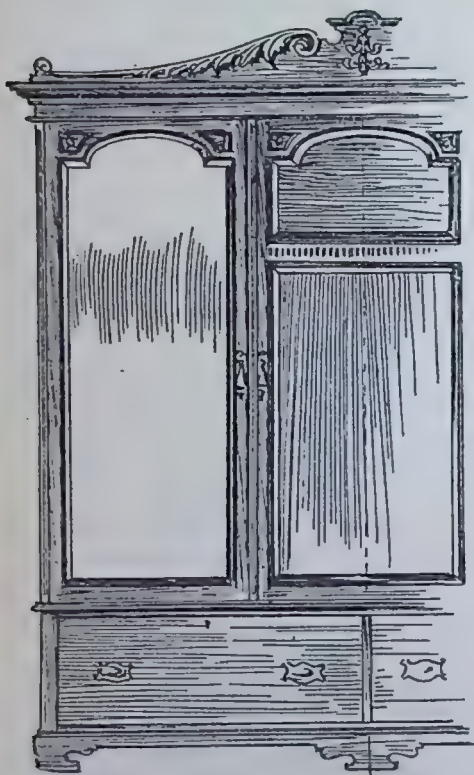
Covering Jewel Box with Leather.

[394] E. R. F. (London) writes: "Having made a jewel case in mahogany, with drawer, four trays swinging out over ends, and falling front, I wish to cover it in a good leather. Do you think this is too difficult a job to be undertaken by an amateur? If so, could you give me the address of a firm who would do it. If not, could you give me some directions?"

REPLY.—We see no reason why you should not carry out the covering of your jewel case in leather provided you are careful in cutting and laying. You will require a good stiff paste of rye flour, such as is used for pasting Linoleum down, or a little fresh paste from the local shoemaker would answer your purpose. A split morocco, roan or other leather is suitable for the purpose (generally known as "skiver") and should be obtainable from one of the following addresses:—George and Co., Dean Street, Soho, London, W.; Hickman, 35, Grafton Street, Tottenham Court Road, W.; A. J. Woolnough, 30, Hoxton Square, London, N. The leather should be in one piece, without joins, for each separate part of the case, so cut that it will cover top, sides, edges and turn in. The corners will be your greatest difficulty, and it would be best to examine an ordinary book, purse, or case covered with leather or leather paper so that a clear idea is obtained of the manner in which the corners are lapped. A trial can be made with a piece of linen or stout paper, such as cartridge, laid over the parts you wish to cover, which will serve as a template by which you can cut the leather without waste. The paste should be well rubbed into the leather, and when laid this can be ironed, rolled, or rubbed down with a smooth handled knife or comb back, taking care to lay a piece of paper over the leather surface to avoid scratching. Do not use too much paste; it may be allowed to dry in somewhat before laying. Wet paste will tend to soil the leather. Any paste that gets on the surface can be readily removed with warm water lightly rubbed. If the locks and hinges are already fitted these must be removed and refitted after the box is covered.

Wardrobe.

[395] G. R. M. (Birmingham) writes:—"Could you let me have a sketch of a wardrobe to match the cheval dressing table illustrated on page 208 of your issue of August, 1912 (Volume XVI.)? I wish to have three doors (the two side ones with mirrors) and two deep drawers below."



(No. 395) WARDROBE TO MATCH CHEVAL DRESSING GLASS IN ISSUE OF AUGUST, 1912.

REPLY.—A wardrobe to match the cheval dressing table referred to should be 6 ft. or 6 ft. 6 ins. wide; height, 6 ft. 9 ins. to cornice, with an additional 7 ins. or 8 ins. for pediment; depth, back to front over ends, 21 ins. A suggestion, showing two-thirds of the width, is given here, to be made in either three or four carcasses. The two outer doors would be mirrored. The heading of door frames can be shaped and carved to match the top of dressing table mirror, all panels being bevelled. A row of flutes could also be introduced under the upper panel in centre, to extend the full length of the rail. Cornice can be allowed 5½ ins. over all, the mould taking 3 ins., with a projection of 1½ ins. Doors will be of 1 inch stuff; also drawer fronts and carcase sides; plinth, 4½ ins. high, shaped as shown, in two cuts; door panels, ¾ in. thick. Usual fittings would be one-third trays and two-thirds hanging space. A brass rod with sliding hooks is a useful fitting, also a brass rod from side to side for hanging trousers. Side doors can be 22 ins. wide; centre door, 25 ins. wide; stiles, 3 ins. wide.

Canoe Making—Bending Ribs.

[396] W. W. H. (York) is making a canoe, and asks the method of bending the ribs when a steaming tank is not available.

REPLY.—You will be quite unable to cope with the bending of a piece of ash, 2 ins. wide, without the aid of a proper steaming tank, and we should advise you to buy all the bent parts for your canoe from a firm who specialise in such work. Messrs. Borst Bros., of 370, Old Street, London, E.C., or any other firm who undertake this class of work would quote you upon receipt of full size drawings. Bent work requires the making of special saddles to suit the work in hand, and such saddles or jigs when once made can be used again and again. Hence it pays to make bent work in quantities. When tackling bent work the amateur should bear in mind the fact that timber will not stretch the slightest extent without rupture, and consequently the difference in length between the outside and the inside edge of a bend must be obtained by compression.

Bending Oval Ends for Extension Dining Tables.

[397] H. S. S. (Yarmouth), writes:—"I wish to make an extension dining-table (in oak) with oval ends. Can you tell me how I can bend the wood for rails under top?"

REPLY.—You can bend the stuff for the oval ends by steaming or softening in hot water, afterwards fastening to a mould where it must remain till thoroughly dry. As indicated in Fig. 1, the oval framing is laminated, being composed of several layers of thin stuff bent and glued round a mould cut to the exact shape required. The thickness of each layer should be governed by the radius to which it is to be bent; the shorter the radius the thinner each layer would be, and each piece should bend easily to the radius

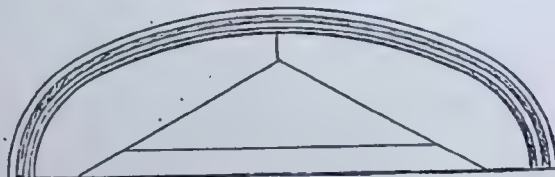


FIG. 1.

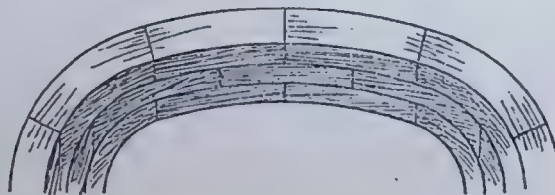


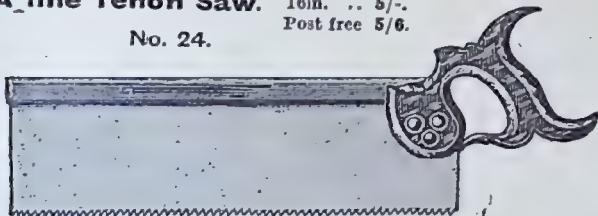
FIG. 2.—BENDING OVAL ENDS FOR EXTENSION DINING TABLE (No. 397).

required. Each succeeding layer must be longer than the previous one, to make up for the difference in the size of the curve it forms. Allow about a couple of days to dry. The end framing may, however, be built up as indicated at Fig. 2, a method more often followed and particularly good if the part is to be veneered. In this way the curve is built up of short segments in layers, each segment lapping the joints of the layers above and below, to be glued and nailed

J. BUCK'S CARPENTRY TOOLS.

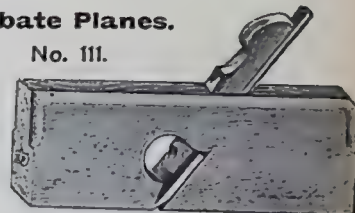
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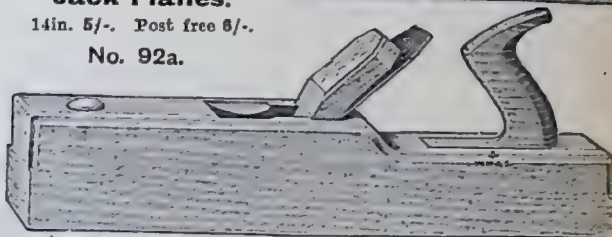
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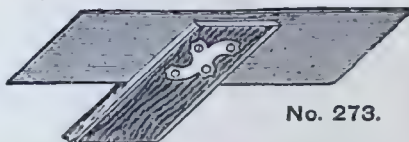
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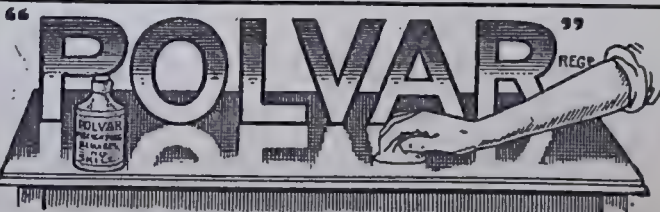


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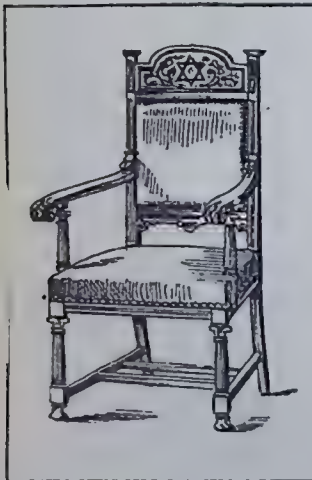
THE STANDARD CHEMICAL CO., Dept. 19, Gray's Inn Road, LONDON, W.C.

together. The line of the curve should be first set out and the wood in layers of 1 in. stuff laid over it (*i.e.*, five layers for a framing 5 ins. deep).

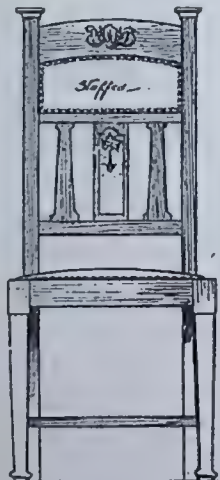
Masonic Chair.

[398] C. W. G. (Chudleigh) writes:—"I wish to make an arm-chair for use in a Freemason's Lodge room. I can do the construction, carving, etc., but would like an idea for the design."

REPLY.—You do not state whether it is to be the principal chair or one of a set, a point which will affect the dimensions. If the former, the height over all may be 4 ft. to 4 ft. 3 ins. on the lines shown in our sketch. The height of seat may be 20 ins., and the height of arms about 9 ins. above this. Size of the upholstered pad in back, about 16 ins. by 16 ins., finishing at 20 ins. above seat; back legs $1\frac{1}{2}$ ins. on face by $2\frac{1}{2}$ ins. thick, tapering to $1\frac{1}{4}$ in. top and bottom. Rail under back pad can be 2 ins. wide, with a shaped finish. Head rails would be 7 ins. or 8 ins. wide, of $1\frac{1}{2}$ in. stuff, which will allow for any important symbols, etc., that require



MASONIC ARM CHAIR (No. 398).



SINGLE CHAIR (No. 399).



ARM CHAIR (No. 400).

to be carved. The ends of arms and tops of back legs are indicated as carved, the latter being also fluted. Size of seat can be 24 ins. wide, and depth back to front 21 ins. Legs may be $2\frac{1}{2}$ ins., and are shown as turned, with carved capitals and reeded shafts. The column supporting the arms is similar. Width of the arms should be at least $2\frac{1}{2}$ ins.; these may be fitted with upholstered pads instead of being plain as shown. A chair which may interest you as an alternative to the above was illustrated in THE WOODWORKER for May, 1910 (price 4d., post free), and we should think you could easily adapt this to your requirements.

Dining Room Single Chair.

[399] F. W. G. asks for dimensions of single dining room chair, to match arm chair No. 400?

REPLY.—We give a front and part side elevation of small chair to match armchair. Height of seat will be 18 ins.; back 2 ft.; height 3 ft. 6 ins. over all. Back legs will be $1\frac{1}{2}$ in. or $1\frac{3}{4}$ in. face by $1\frac{1}{2}$ in. thick. Top rail shows 3 ins. wide full, with the pad 5 ins. high in centre. Width of back can be 15 ins.; depth of seat $16\frac{1}{2}$ ins., and width across front over all 18 ins.

For the rest dimensions for armchair will stand. With regard to the pincushion seat the first thing will be the webbing—about three lengths interlaced and stretched as tight as possible, otherwise the seat may sag. The webbing is first doubled at end and fixed with four $\frac{3}{8}$ in. tacks, after which it is passed through a "strainer" pulled down flat and tacked, cut off, and the end turned over and tacked again. A piece of serym or canvas is then stretched over the webbing and tacked down. This can be layered with black wadding and horsehair, and then covered with calico, after which the final covering of leather will be fixed with round-headed brass nails. A fund of general information is contained in our handbook on "Up-holstery," 7d., post free.

Dining Room Arm Chair.

[400] F. W. G. (Pontnewydd) encloses two excellent sketches of dining room chairs, and asks us to give suitable dimensions for the arm chair.

REPLY.—We compliment you on the sketches of

chairs enclosed with your letter; they are much above the average of those we receive. As you require a chair of the taller type this may be given a height over all of 3 ft. 9 ins., *i.e.*, the seat 18 ins. high and the rest thrown into the back. The width can be 18 ins. The top rail would finish $4\frac{1}{2}$ ins. by 1 in., with the centre canted. The back pad under this is 5 ins. wide. The three shaped slats can be 12 ins. long, including joints, out of stuff $2\frac{1}{2}$ ins. by $\frac{5}{8}$ in., fitted between rails $1\frac{1}{2}$ in. by 1 in. thick. The back legs will be 3 ft. 9 ins., and will have a rake at the seat height of about 2 ins., Dimensions at the seat height can be $1\frac{1}{2}$ in. face by 2 ins. or $1\frac{1}{2}$ in. face by $1\frac{1}{4}$ in., tapering to $1\frac{1}{4}$ in. at each end. The cappings can be moulded to $\frac{3}{4}$ in. thick, and should project about $\frac{3}{8}$ in. over back lges. Depth of seat, back to front, would be 19 ins., and across front over legs 22 ins. Legs can finish $1\frac{1}{2}$ in. by $1\frac{1}{2}$ in. square, tapered with shaped toe; framing of seat $2\frac{1}{2}$ in. face by $1\frac{1}{2}$ in. thick, leaving $\frac{3}{4}$ in. show-wood, the rest to be rebated for pincushion seat. The arms should be 2 ins. wide by $\frac{3}{4}$ in. thick, and would be 19 ins. long, to finish 2 ft. 3 ins. from ground. The underframe may be $\frac{3}{4}$ in. by $1\frac{1}{4}$ in. and the chair seat should be well braced in at the angles to stiffen the whole thing.

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Some of the more important series are as follows, and for reference we give in every case the date of issue:—

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THE Governors will require about the end of August, a TEACHER OF METAL-WORK for boys from a Central School.

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C. T. MILLIS, Principal.

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WANTED to commence early in August, a Perpetetic Teacher of Light Woodwork, in the Elementary Schools in the Borough. Must be a Certificated Teacher under the Board of Education or have other equal qualifications, and possess a Diploma in Woodwork, recognised by the Board. Commencing salary £140 a year. Further particulars which must be clearly stated, and Form of Application to be returned by 7th July, from:—

W. SEATON, Secretary.

Education Office, Town Hall, Swindon.

18th June, 1913.

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TWO Assistant Manual Instructors will be required to commence duty after the Summer Holidays, one for Woodwork and one for Woodwork and Metalwork. Salary £55 to £110 per annum, according to qualifications and experience. Preference will be given to Teachers and those who have been trained as Manual Training Pupil Teachers.

Forms of Application may be obtained from the undersigned.

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Education Office, Council House, Birmingham.
2nd June, 1913.

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JNO. ARTHUR PALMER,
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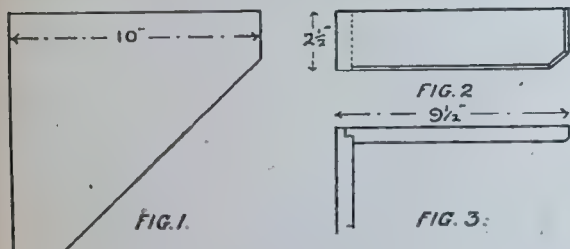
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27th May, 1913.

HOW I DO IT.

Practical Paragraphs.

Corner Shelf.

A LARGE corner shelf (for bust or other ornament) may be added to any room as follows. Cut a shelf of the size desired—say of 10 in. side and $\frac{3}{4}$ in. thick. Take care that the angle fits the wall. The front

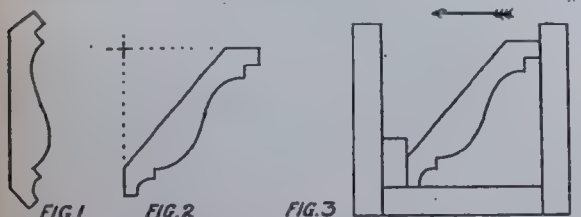


AN EASILY-MADE AND USEFUL CORNER SHELF.

edge may be as indicated at Fig. 1, or it may be a quarter circle or any other shape. Cut two fillets (Fig. 2) about $9\frac{1}{2}$ ins. long, $2\frac{1}{2}$ ins. wide and $\frac{3}{4}$ in. thick, and chamfer the front and bottom edges as shown. These may be rebated at the angle (Fig. 3), or one let may merely butt against the other. Nail to wall at a convenient height and screw on the shelf above. If the shelf is suitably draped—nailed to front edge of shelf with large brass-headed ornamental nails—the method of fixture will be hidden.

Cutting Large Mouldings.

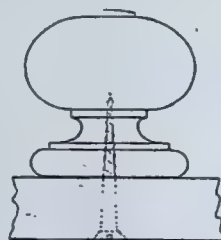
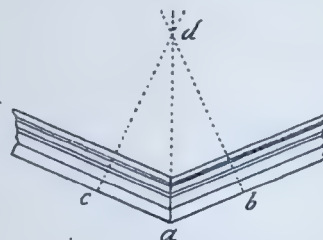
Large wood mouldings, such as are employed for cornices of panelled rooms, bookcases, wardrobes and large fittings, are not made solid, but are run out of flat boards, the object being to reduce the cost. Younger woodworkers are frequently at a loss as to how these should be cut for mitring. Of course they have to be cut in a regular mitre box, but if placed within this exactly in the position they will

THE CORRECT
MOULD.MOULDING IN MITRE
BOX, READY FOR CUTTING.

eventually occupy, being blocked up as shown to fit tightly, there is no difficulty. The cutting must be in the direction of the arrow (that is, away from the face of moulding) so that the edges of moulding are left clean. When a large number of such mouldings have to be cut it is customary to knock up a mitre box specially for them. The important point to note is that the moulding should lie in its correct position when being cut. If placed at the wrong angle vertically a faulty joint may result.

Re-fixing Drawer Knobs.

Wooden drawer knobs have a tendency to work loose in time owing to the thread of the screw breaking. If the damage is slight some cotton thread may be glued and wound round the screw and the knob glued in again. If, however, the thread is hopelessly worn it is better to cut off the screw and plug up the hole in the drawer. This done, screw the handle on from the inside as shown, putting a touch of glue on the flat face of the knob which comes on the front of drawer.

RE-FIXING A
DAMAGED DOOR KNOB.HOW TO STRIKE ANGLES FOR
MOULDINGS.

Striking Angles for Mouldings.

When mouldings come at an angle other than a right angle it is sometimes difficult, without the proper appliances, to get every member to meet closely. Assume that the angle is as shown. At the right mark a point *b* (any distance from *a*), and at the left mark of *a c* equal to *a b*. From *b* and *c* draw lines at right angles to the respective sides; these will intersect at *d*. Join *a d*, and we have the correct mitre. This is a simple and useful method to adopt when mouldings have to be fixed on six, eight or more-sided objects.

Easily Made Doors.

The simplest kind of door for small jobs is that made up of tongued and grooved match boarding, with battens nailed across. The boards may be beaded at both sides or V-jointed, as preferred; this makes little difference except as regards appearance. The edges of the battens (or, as they are sometimes called, "ledges") should be slightly bevelled or chamfered.



BATTENED DOOR.

If these battens are to be fixed on the face of the door which comes towards the rebate of the door frame they must be set back about $\frac{1}{4}$ in. from the edge of door as shown. If to be fixed on the other side they may go close up to the edge. Place the nails as indicated, in order that the hold will be evenly distributed over batten and match boarding alike. Screws may be used at the four corners. For a short door of from 2 ft. to 3 ft. two battens will be sufficient. Larger doors will require three, or perhaps four, battens.

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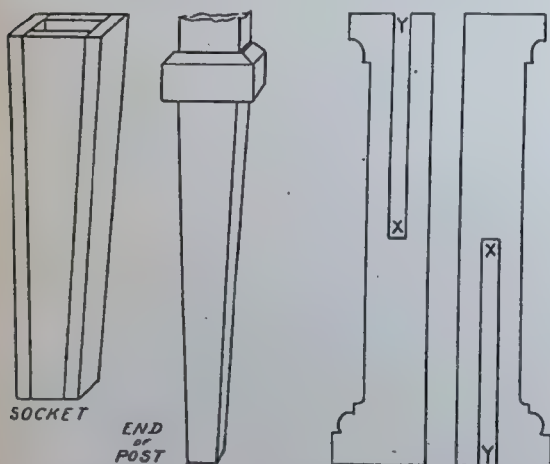
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Sockets for Clothes Posts.

Clothes posts will last much longer if sockets, to be sunk in the ground, are provided to receive them. If the post is of the usual length, from 8 ft. to 9 ft., and about 4 ins. square, the lower end should be slightly tapered for 2 feet. Immediately above this, four oak fillets are mitred and nailed on as shown, these being $\frac{1}{2}$ in. or $\frac{3}{4}$ in. thick. The upper edges should be bevelled to let the wet run off.

The socket is a tapered box, 2 feet long cut of $\frac{3}{4}$ in. oak, made so that the post will fit closely but not too tightly. This socket is sunk in the earth, with just an inch or two above ground so that it may not get filled with water after every shower. The post should be held in the socket vertically whilst the earth is being rammed around the latter. Should the post at any time be removed, a loose block for dropping into the socket should be made.

Clothes posts, it may be added, look better with chamfered edges and chamfered top. Holes near the top for the clothes line are better than pegs which, unless very stout, are apt to break.



SOCKETS FOR CLOTHES POSTS.

HALVED JOINTS IN FRETWORK.

Halved Joints in Fretwork.

When halved joints are used in the construction of fretwork ornaments there is sometimes a difficulty in getting the end parts to meet closely. This difficulty is lessened if the inner ends of the slots (lettered X in the illustration) are made to take the thickness of wood easily, and if the openings (Y) are made a little tight. If the fit is very close at the middle the joint is apt to gape at the ends, but with a fairly tight mouth at Y the fit should be good.

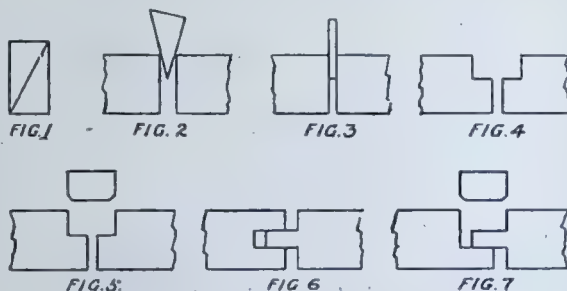
Loose Nails in Walls.

When a nail is driven into a wall the plaster loosens and sometimes breaks away. To remedy this, remove the nail; take a piece of wadding, soak it in thick glue, wrap it round the nail, and then re-insert, pressing it well home. Any loose plaster may be touched up with glue. Remove any surplus glue with a clean rag and water.

Faulty Floors.

Floor boards often shrink, leaving a gap which is not only unsightly, but which provokes draughts and harbours dust. For this there are various remedies.

First.—Cut two wedge-shaped strips out of one parallel length, as Fig. 1, remove all trace of dust from the joint and glue in the wedge-shaped strips as Fig. 2. When the glue has thoroughly set plane off the part that projects. If the gap is very narrow a thin strip may be driven in as Fig. 3.



HOW TO REPAIR FAULTY FLOORS.

Second.—Another plan is to run a groove in the floor, as Fig. 4. This is most easily done with a dado plane, which has spurs to cut clean edges, and also a stop to secure the right depth. A strip of wood may be temporarily nailed to the floor as a guide for the plane. Gauge and plane up a strip, as in Fig. 5, gently chamfering the lower edges, so that the piece may enter easily. Glue this in, driving it right down to the bottom of the groove. When hard, plane down flush with the floor. When the floor is tongued (Fig. 6) it is usual to make the groove like Fig. 7.

EDITORIAL NOTICES.

Contributions.—The Editor invites correspondence and original contributions on all subjects relating to woodwork and other handicrafts. All MSS. should be accompanied by a stamped and addressed envelope for return if unsuitable.

Books for Review, price lists, tools, materials, etc., sent for inspection, enquiries and all correspondence relating to the literary portion of the Magazine should be addressed to the Editor.

Editorial Address: "The Woodworker and Art Craftsman," Sardinia House, Kingsway, London, W.C.

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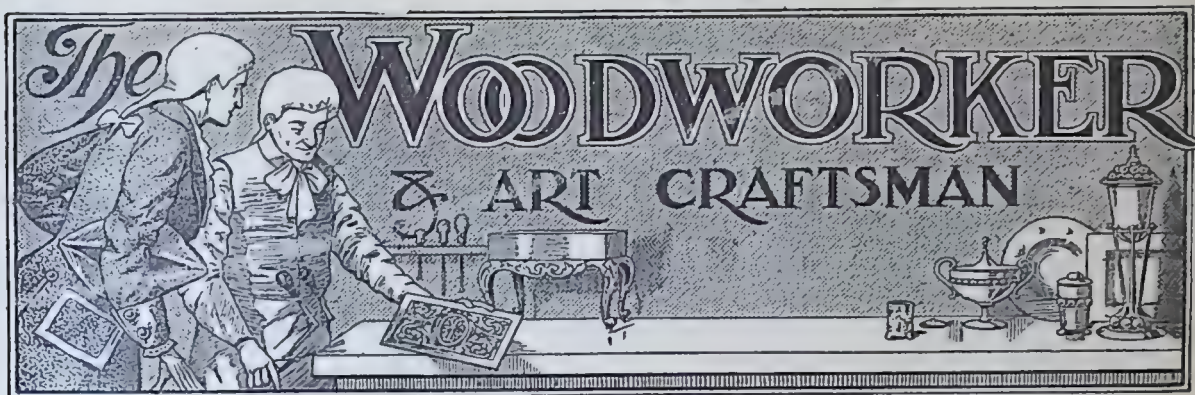
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Subscriptions.—"The Woodworker and Art Craftsman," with Design Supplement, will be sent post free to any address in the Postal Union for 4s. per annum, payable in advance. Remittances should be made by postal order and addressed to the Publishers.

Designs.—"The Woodworker and Art Craftsman" Design Supplements may be had FREE with the current number of the Magazine for one month only. They are not given away with back numbers, but may be had separately, price Sixpence each.

Publishing Correspondence relating to sales of the Magazine, subscriptions, etc., to be addressed to the Publishers, EVANS & BROS. LTD., Sardinia House, Kingsway, London, W.C. Telephone Holborn 6443. Telegrams: "Byronic, Estrand, London."



DESIGN FOR THE MONTH.

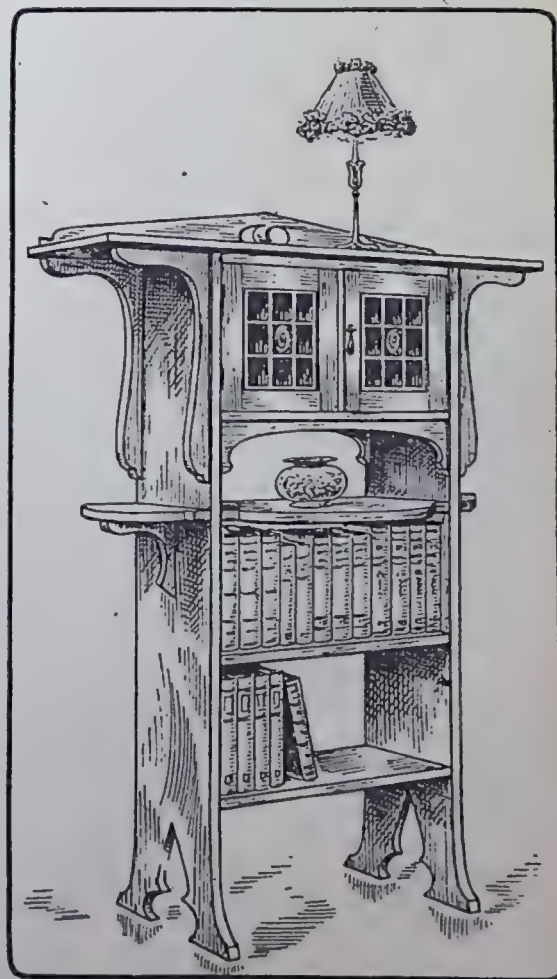
CABINET BOOKCASE.

A Plain cabinet work is a favourite recreation of many of our woodworking readers we give, on this month's Supplement, full working details for making the elegant article of furniture illustrated here. Whether made for the home or for sale, a cabinet bookcase is always welcomed as a useful addition to the sitting room or bedroom, and on the lines indicated will be found serviceable for almost any corner.

The Design.

Although chosen as the subject of our Design Supplement the cabinet-bookcase comes under the category of plain furniture. It is ornamented neither with carving nor inlaying. There are no mouldings. None of the joints require special tools, and no part of the work presents difficulties which even the less experienced amateur cannot overcome. Some of the parts are shaped, and, as woodworkers who are not draughtsmen are sometimes unable to make satisfactory enlarged drawings from scale diagrams, the various shaped parts are given full size on the Supplement. With these—which dispense with the labour of drawing—the article is one that any amateur can attempt.

The height from floor to top shelf is 4 feet, the back pediment raising the total height to 4 ft. 2½ ins. The carcass width is 1 ft. 6 ins., while the width over top is 2 ft. 7 ins. At the sides the projecting top is supported by gracefully-shaped brackets. Cupboard doors, which may be fitted with leaded lights as shown, or with plain glass, or with a wood panel, as desired, are 10 ins. high. Below the cupboard is an arched recess, with a depth of 6 ins. between the shelves, this being useful for reference books or other objects that require to be ready at hand. The shelf here is a shaped one, projecting slightly in front, while the continuation shelves at the sides carry the line neatly round to the back. A reference to the sketch plan of this shelf (Fig. 7) will at once



CABINET BOOKCASE (Continued).

show that the arrangement forms a feature of the design. The side shelves are supported by central shaped brackets. The two lower spaces, 9 ins. each in height, are for books.

The narrow carcase width makes the article suitable for a small room or where space otherwise is limited. At the same time the top is roomy and may be used for a lamp or large flower. The cupboard will serve as a tobacco or (in the bedroom) medicine cabinet, or it may be used for more valuable books.

Materials.

WOOD.—For a cabinet in this style there can be little doubt that oak is the best wood to use. Walnut and mahogany are suitable if other furniture has to be matched, but otherwise are not recommended in preference to oak. A cheaper cabinet, and effective if nicely finished, can be made by using basswood, to be afterwards stained and either waxed or polished. For oak, walnut or mahogany the price will be about 23s. A cutting list is given here:—

	Long. ft. in.	Wide. ft. in.	Thick. in.
A—sides (two)	.. 4 0	1 1	$\frac{3}{4}$
B—Top	.. 2 7	1 2	$\frac{3}{4}$
C—Sub-top	.. 1 5 $\frac{1}{2}$	10	$\frac{3}{4}$
D—Cupboard shelf	.. 1 5	10	$\frac{3}{4}$
E—Recess shelf	.. 1 5	11 $\frac{1}{2}$	$\frac{3}{4}$
F—Continuation do. (two)	.. 5	10	$\frac{3}{4}$
G and H—Book do. (two)	1 5	10	$\frac{3}{4}$
I—Top brackets (four)	.. 1 3 $\frac{1}{2}$	6	$\frac{3}{4}$
J—Shaped arches (two)	1 4 $\frac{1}{2}$	2 $\frac{3}{4}$	$\frac{3}{4}$
K—Side brackets (two)	.. 6	4 $\frac{1}{2}$	$\frac{3}{4}$
L—Door stiles (four)	.. 10	1 $\frac{1}{2}$	$\frac{3}{4}$
M—Door rails (four)	.. 8 $\frac{1}{2}$	1 $\frac{1}{2}$	$\frac{3}{4}$
H—Door astragal	.. 10	$\frac{3}{8}$	1
O—Cupboard back	.. 11 $\frac{1}{2}$	1 5 $\frac{1}{2}$	$\frac{3}{4}$
(or, if to cover Recess	18 $\frac{1}{2}$	1 5 $\frac{1}{2}$	$\frac{3}{4}$
P—Pediment	.. 2 6	2 $\frac{1}{2}$	$\frac{3}{4}$

As all sizes are quoted net, allowance must be made for cutting when ordering the wood.

DOOR FURNITURE.—The only brass furniture required are two pairs of butt hinges, a flush cabinet bolt for inside of left door and a drop catch. A lock may be added if desired.

DOOR PANELS.—If sheet glass is used for these the cost is negligible. Should, however, leaded glass panels be used they will probably have to be made to order. The rebate size is 7 $\frac{1}{2}$ ins. by 5 $\frac{1}{2}$ ins. (daylight size being 7 ins. by 5 $\frac{1}{2}$ ins.), but the actual size should not be fixed until the doors are made. The cost of a pair of plain leaded glass panels, procurable through the local glazier, will be approximately 2s. 6d. or 3s.

The Editor will be pleased at any time to advise readers as to the cost of materials and fittings for any article described in *THE WOODWORKER AND ART CRAFTSMAN*, and to give addresses of firms from whom these may be purchased.

The Principal Parts.

SIDES (A, Figs. 2 and 3.)—The most important parts are the two sides, both 4 ft. by 13 ins. and $\frac{3}{4}$ in. thick. The width for the greater part of the length is 10 ins., but at the floor they spread out as indicated, thus helping to make the article firm. The pattern of shaping at floor is shown full size on the Supplement.

The sides are dovetail slotted to take the sub-top C (see Fig. 4), and the inner faces are dovetail-grooved (Figs. 5 and 11) for shelves D, E, G and H. The grooves will be stopped $\frac{1}{4}$ in. from front edge. If the worker prefers, he may dovetail-groove only the cupboard shelf D, and tenon the lower shelves (each with three tenons as Fig. 8) to the sides. In this latter case the sides will be mortised for the tenons. The sides will also be rebated at top to take the cupboard back. This will be referred to when the back is considered.

TOP (B.)—For the top a finished thickness of $\frac{5}{8}$ in. will be ample. In length it is 2 ft. 7 ins., overlapping the carcase by 6 $\frac{1}{2}$ ins. at each side. Its width is 14 ins., the projection being 2 ins. at both front and back.

The top, which is glued and screwed to the sub-top C from below, has to be holed for dowels which take the pediment and the long brackets. The front corners should be slightly rounded. See Fig. 6 for plan of underside of top.

THE SUB-TOP (C), 10 ins. wide, is dovetailed to the top edges of sides as shown at Fig. 4. Two dovetails will be sufficient, and if screws are passed aslant through each into the side the article will be held rigid. Allowing for the dovetails the sub-top will be 17 $\frac{1}{2}$ ins. long, with a finished thickness of $\frac{3}{4}$ in. Its edges are flush with those of sides. If a cupboard back is to be fitted in the way described later on the sub-top and cupboard shelf will be reduced $\frac{1}{4}$ in. at back to take this.

CUPBOARD SHELF (D.)—As shelves are intended to come flush with the edges of sides they are all (with the exception of the recess shelf) 10 ins. wide, with a thickness of $\frac{3}{4}$ in. The cupboard shelf D should, for the sake of rigidity, be dovetail-grooved into the sides (Figs. 5 and 11); at the front the shelf is notched back about $\frac{3}{4}$ in. so that the groove is not visible. A $\frac{1}{4}$ in. strip will be planed off the back edge to take the cupboard back.

THE RECESS SHELF (E), being shaped in front, has a total width of 11 $\frac{1}{2}$ ins. The square end part, however, is flush with edge of side. This shelf may be dovetail-grooved or tenoned to sides.

CONTINUATION SHELVES (F.)—As already explained these carry round the line of the recess shelf and form side shelves; and, as it is desirable that the whole should appear as one shelf, the grain of the two side shelves F should correspond with that of recess shelf E—that is, it should run with the short width, and not from back to front.

These continuation shelves may be screwed to

the sides from the inside, this of course being done before the recess shelf is fitted.

BOOK SHELVES (G and H), 10 ins. wide and $\frac{3}{4}$ in. thick, may like the recess shelf be either dovetail-grooved or tenoned in position. If grooved, the grooves will be stopped back $\frac{3}{4}$ in.

If these shelves are tenoned, the tenons should be very slightly wedge-shaped. The mortises cut for them in the sides should also be made a little tighter at the mouth than inside.

LONG TOP BRACKETS (I).—There are four of these, 15 $\frac{1}{2}$ ins. long, 6 ins. wide and $\frac{3}{8}$ in. thick, cut to the pattern as on Supplement. The four will come out of two pieces each 17 ins. by 6 ins. The shaping may be done with a fretsaw, pad saw

THE SHAPED ARCH PIECE (J) below the cupboard is 16 $\frac{1}{2}$ ins. by 2 $\frac{1}{2}$ ins. and $\frac{5}{8}$ in. thick. It is set back $\frac{1}{4}$ in. from face of shelf and edge of side, and is held by a glued block neatly fitted in behind. It may also, if thought necessary, be notched into sides. Two arch pieces are allowed for in the cutting list, both being desirable if the recess is to be open at the back. If, however, the cupboard back is taken down to cover the recess a second shaped arch is not required.

TWO SHORT BRACKETS (K) are wanted to support the continuation shelves F. They are 6 ins. long, 4 $\frac{1}{2}$ ins. wide and $\frac{5}{8}$ in. thick, and may be dowelled and glued in position in centre of sides. If preferred; they may be screwed from the inside.

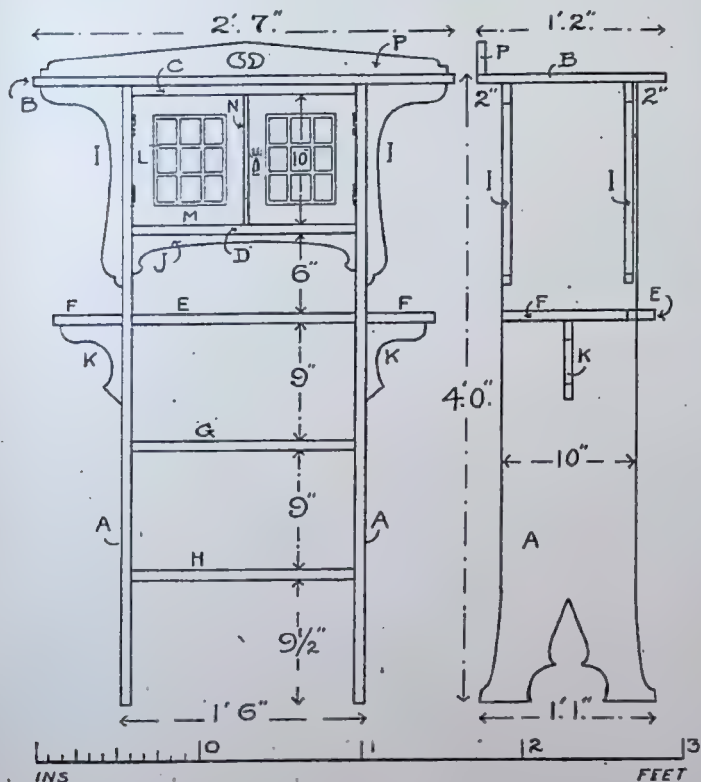


FIG. 2.—FRONT ELEVATION.

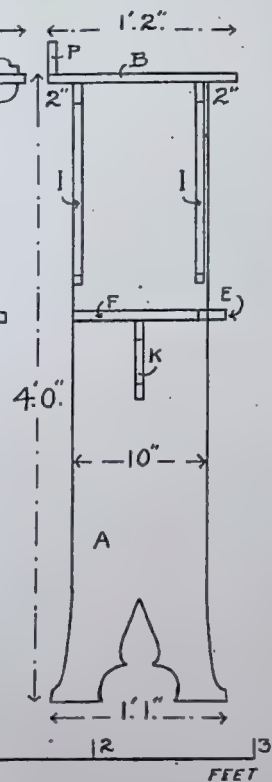


FIG. 3.—SIDE VIEW.

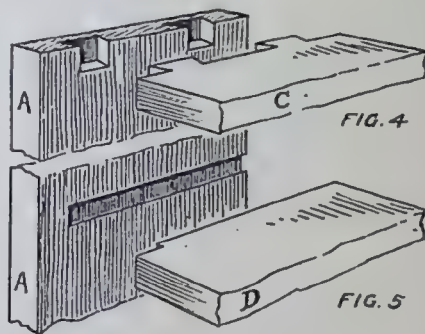


FIG. 4

FIG. 5

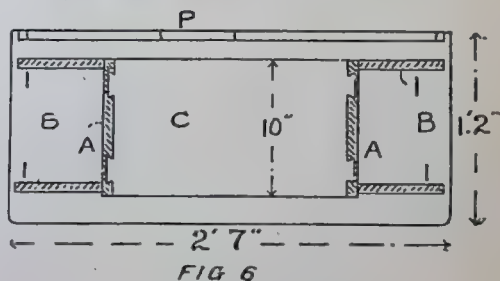


FIG. 6

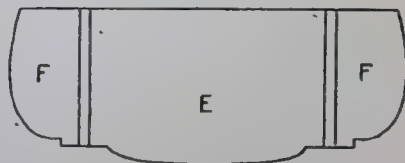


FIG. 7.—RECESS SHELF AND SIDE SHELVES.

or bow saw, whichever is at hand. The important matter is to saw correctly to the design and to clean up all edges carefully.

The front brackets are set back $\frac{1}{2}$ in., so as to be in line with the cupboard doors. The back ones are flush with back edge of sides. These brackets may be glued and screwed to the sides from inside. The screws of the front brackets will be hidden by the doors but care should be taken not to place them opposite a hinge. The top edge of bracket may be dowelled to top, and in boring for dowels any risk of splitting the wood across the grain must be avoided.

THE PEDIMENT (P) is a shaped piece 2 ft. 6 in. long, 2 $\frac{1}{2}$ ins. wide and $\frac{3}{4}$ in. thick. It is dowelled and glued to the top, flush with back edge, and may if thought desirable be strengthened with screws passed in from below. The piercing may be done with a fine pad saw or a fret saw.

The Cupboard Portion.

DOORS.—These are 10 ins. high and 8 $\frac{1}{2}$ ins. wide, and will be framed up of stiles (L) 10 ins. by 1 $\frac{1}{2}$ ins., and rails (M) 8 $\frac{1}{2}$ ins. by 1 $\frac{1}{2}$ ins., all finishing $\frac{3}{4}$ in. thick. It will be seen from the section

CABINET BOOKCASE (Continued).

(Fig. 9) that there is no moulding; the rebate is a deep one, bringing the glass to within 3-16 in. of face. If the work is carefully done this finish is very effective. The astragal (N) is a flatslip, $\frac{3}{8}$ in. by $\frac{1}{8}$ in. (Fig. 10).

The doors are hinged to the sides with $1\frac{1}{8}$ in. butts, being set back so that they are $\frac{1}{8}$ in. from faces of shelves and side edges. A door stop and the metal furniture already referred to must be provided.

CUPBOARD BACK (O).—This may be of $\frac{1}{4}$ in. stuff in two widths, the joint being covered by narrow fillets on inside face. If the cupboard part only is to be backed, the sub-top and cupboard

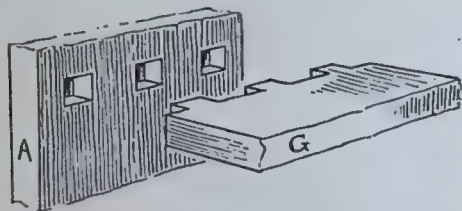


FIG. 8.—SHOWING TENONED SHELF.

shelf will be cut back $\frac{1}{4}$ in. and the upper $11\frac{1}{2}$ ins. of back edges of sides rebated ($\frac{1}{2}$ in. wide by $\frac{1}{4}$ in. deep) to receive the back, which may then be screwed to back edges of shelves and sides.

If the recess portion is to be backed as well, the recess shelf will also be cut back $\frac{1}{4}$ in., and the back edges of sides will be rebated $18\frac{1}{2}$ ins., so that the back will come down the full length from top to underside of recess shelf. Backs are often fitted in a slipshod manner, but in a case of this sort it is worth while doing the work neatly.

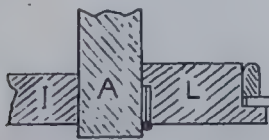


FIG. 9.—DOOR MOULDING.



FIG. 10.—DOORS, WITH ASTRAGAL.

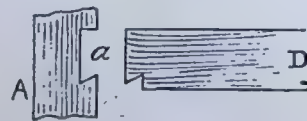


FIG. 11.—SHELF DOVETAIL GROOVED.

Finishing.

CONSTRUCTION.—Most of the construction has been explained in the description of the parts. As the finished article, when furnished with books, will be fairly heavy, well made joints and sound glueing are necessary. Two matters of importance may be emphasised: (1) The edges of sides, sub-top and shelves are flush throughout, with the single exception of the shaped recess shelf already dealt with; and (2) the doors, top brackets and shaped arch are uniformly set back $\frac{1}{4}$ in. This allows the $\frac{1}{8}$ in. door astragal to come flush with edges of sub-top and cupboard shelf.

FINISH.—Oak should be cleaned up with sandpaper and glasspaper till every surface is smooth

and white. It may then be waxed, or slightly stained and then waxed, the precise finish depending on the surrounding furniture.

Mahogany and walnut will be finished by French polishing.

Basswood may be stained oak, mahogany, walnut or other colour. If stained oak, it may be wax-polished, but if stained to one of the darker furniture woods it will look better if French polished.

Alternative Suggestions.

If the article is required as a whatnot rather than a bookcase a lighter effect may be had by omitting the lowest shelf H, and substituting for it either two rails $\frac{3}{4}$ in. square, or a narrower shelf of about 6 ins. In this case the recess shelf E might be left straight (only 10 ins. wide) and shaped arch pieces like J could be fitted below shelves E and G.

If the cupboard is to be used for curios or china, windows might be pierced in the sides to correspond with the door panels. The edges of the openings would have to be deeply rebated to match the doors.

The whole cabinet bookcase might be used as an article for standing in the middle of a room, or placed endways against a wall so that back as well as front is seen, by making the following alteration:—Omit pediment. Fit cupboard doors at back as well as at front; or fit dummy doors with similar panel treatment. Fit panels same as on doors at sides. Shape the recess shelf E at the back, to the same pattern as at front, and make the continuation shelves F of a semi-circular form so that they will be symmetrical. Should this alternative treatment be adopted the shelves will have to be tenoned instead of dovetail-grooved to the sides, as the grooves would be

seen at the back. In this case the two lower shelves might be strengthened with glued blocks.

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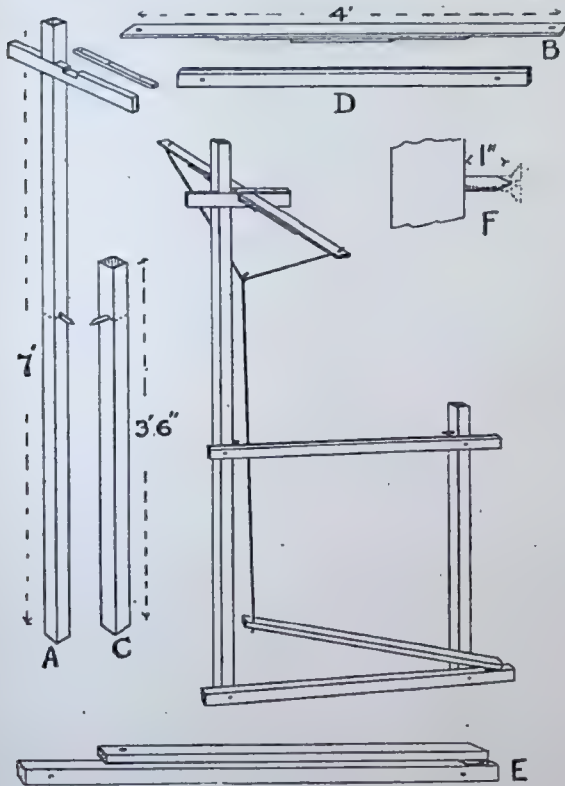
To Make a Hole in Glass.

For a few inches around the place where the hole is wanted cover the glass with putty, or clay. With a pencil or stick make a hole in the putty the size required. Into this pour molten lead. The hot lead will pierce the glass, the hole being the same size as in the putty.

HOW TO MAKE A POLE LATHE.

MAY BE FIXED TO A KITCHEN TABLE.

THE Pole Lathe illustrated in the Manual Training column in the July issue of THE WOODWORKER AND ART CRAFTSMAN has been the subject of several enquiries, and in response to requests we are giving directions for making one.



THE POLE LATHE—HOW TO MAKE IT.

The pole lathe is capable of doing considerable work, and although it cannot compare with the treadle lathe as regards speed and scope, it will be found a useful addition to the Manual Training room as well as the amateur's workshop. It may be easily attached to a kitchen table.

There are five parts to be made:—The upright A, the pole or spring B, the end upright C, the tool rest D and the treadle E.

UPRIGHT.—Taking these parts in order, the upright is 7 ft. by 2 ins. by 2 ins., with a cross bar of 2 ins. by 1 in., halved in about 6 ins. from the top. One of the centres is driven in the upright at a height of 3 ft. 2 ins.; it is a $2\frac{1}{2}$ in. screw with the head filed off and pointed, as indicated at F, and projecting about 1 in.

THE SPRING is composed of three lengths of straight-grained ash, $1\frac{1}{2}$ ins. by $\frac{1}{2}$ in. or 3-16 in., one length being 4 ft., another 2 ft. 2 ins. and the third 10 ins. A small hole should be bored in the ends of the long piece, and

then they should be fitted in the slot cut in the top bracket and kept in place by the strip of wood as indicated, this being screwed on tightly.

THE END UPRIGHT is of 2 in. by 2 in. wood, and cut to a length of 3 ft. 6 ins., the other centre being fixed in at the same height as the first one.

THE TOOL REST should be from 2 ft. to 3 ft. long, the actual length depending on the wood to be turned. A piece of 2 in. by 1 in. wood, with the top front edge chamfered, will do.

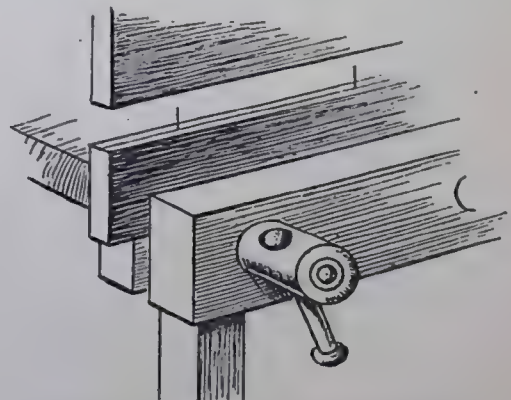
THE TREADLE is attached to a length of 2 in. wood, and may be of 2 in. by 1 in. wood. The bottom piece should be quite 3 ft. long, and the treadle about 2 ft. 9 ins. An ordinary back flap hinge should be used to attach the two pieces.

FITTING.—The various parts should now be screwed together as shown in the sketch, with the tool rest on a level with the centres, and a cord tied to the spring as shown. The cord from the top to the treadle should be of leather or gut. The leather belting used for fret machines or sewing machines is suitable and much cheaper than gut.

The lathe is now ready for work, and next month we will fully explain the method of manipulating it.

Gauging Dowel Holes.

In dowelling two pieces of wood together it is often annoying to find that the holes, when bored, do not quite agree, although they had apparently been correctly gauged. A quick and accurate method of marking the centres for the dowel holes to be bored is to grip one of the boards in the vice if not otherwise fixed. Then nip off the heads of several pins and tap these vertically into the edge of the board at



METHOD OF GAUGING FOR DOWEL HOLES.

the required intervals along a gauged centre line, as in the sketch. The remaining board or part can be then lifted over the other so that the edges are in line, and a smart pressure of the hand will suffice to dent the upper edge with the exact centres.

REPOUSSE WORK.

ORNAMENTAL CRUMB BRUSH AND TRAY.

"**H**AVE nothing in your house but what you know to be useful, or believe to be beautiful," is the advice of William Morris as to furnishing our dwellings; but why should we not carry the idea still further, and make beautiful things out of those primarily intended for use? For instance, one often finds on the back of a sideboard a plaque or dish of brass or copper repoussé work, while tucked away in a drawer is the crumb-tray of dull and uninteresting pattern. It is quite an easy matter to turn the necessary item into an object as handsome as that intended purely for ornament.

have a depression (the shape roughly of the finished tray), scooped out of a block of wood. This must not be treated as a mould in to which the metal is to be pressed, but merely as an assistance in getting the required shape. The first thing to do is to go heavily over the line, outlining the bottom with a thick brass tool. Work on a piece of thick felt over wood, then turn the metal over and mark out the lines where the metal flattens out into a kind of shoulder on the top. Mark out a margin of half an inch from the bottom, and turn this over in a flat hem. The metal is now ready for the formative process.

The shape that is required is a three-sided tray

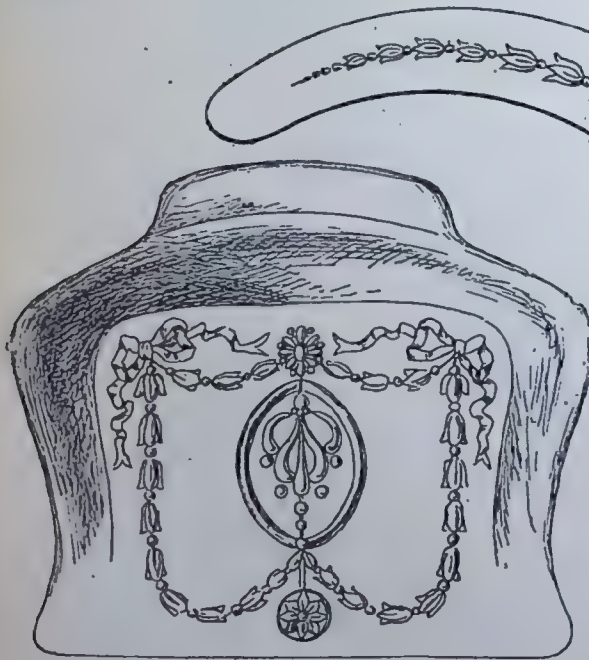


FIG. 1.—REPOUSSE CRUMB TRAY.

The design here given is meant to be carried out in metal work entirely, but for readers who do not care for constructional work an easier course is to purchase a plain oak tray and fix the design on the bottom with tiny studs. For the crumb brush shown here it will be necessary to buy the brush and fix the metal work on the back.

The Crumb Tray.

For the tray fairly thick brass should be used, say 6 or 7 B.M.G. Trace the design on to the metal, and carry a fine traced line all round the drawing to fix it before proceeding to shape up the tray. To do this it will be found a convenience to

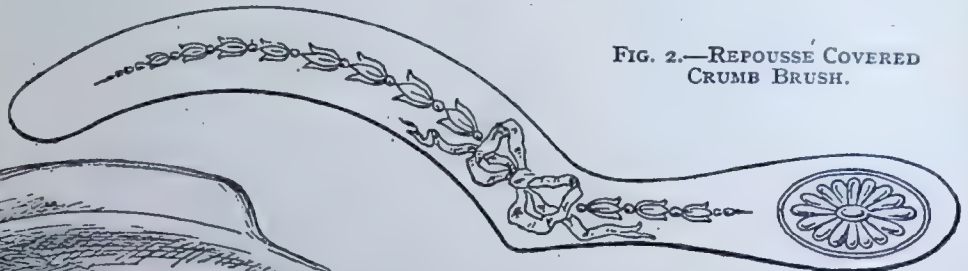


FIG. 2.—REPOUSSE COVERED CRUMB BRUSH.

with gradually sloping sides; a margin which is almost flat is reserved round the upper part of the sides and along the top. There it widens out to form a handle. In order to depress the bottom it is not necessary to beat the central part, as one would if a round bottomed bowl was to be made; the portion contained between the lines marking the shoulder and those outlining the three sides of the bottom has to be stretched by beating it. A broad wooden tool is the best for this purpose, and it should be used in parallel lines along the enclosed space. Then it should be used between these lines, adapting the work to the degree of elevation required. It will soon be found more convenient to place the metal over the depression hollowed out in the beating block, placing a thin piece of flannel or felt between. Annealing may be required at this stage as the metal will be getting stiff and springy. Care being taken not to overheat the brass. When the sides are raised enough the metal should be cut to the outline.

The best way of cutting is to mark a deep line from the wrong side, and then to use a sharp chisel, worked aslant from the right side. A little practise will enable one to cut this out cleanly, leaving a rounded edge which only requires a little trimming to be smooth. The space between the outline now wants working over, so as to curve it the reverse way to the sides.

Now proceed to carry out the ornamental pattern on the bottom. Very little relief is wanted, as the keynote of the design is delicacy of treatment;

and the raising must be done entirely from the back, chasing being reserved for sharpening the details where necessary.

The finish should be bright and highly polished, anything in the nature of an oxidised surface being out of keeping with the style of the period of the design. Do not punch the background of the little oval.

The Crumb Brush.

The brush back is carried out in exactly the same way, but using a thinner metal, as the edges must be burnished over—a difficult matter with thick brass. B.M.G.4 will be thick enough, but in working on thin metal care must be taken not to make the lines too sharp; the design has to correspond with the pattern on the tray, which, being on the heavier gauge, will show a softer outline.

When purchasing a brush choose one with a flat back and slightly bevelled or rounded corners. To prepare it for fastening to the back, mark out the exact shape of the brush on the metal, leaving

a margin of about a third of an inch or more according to the thickness of the brush. Placing it on a thick piece of felt, work up the edge till it stands up at right angles, by running round and round it with a pearl tool used as a tracer. This will be found easy when the right angle has been secured.

With a file thin down the edges till they are as thin as writing paper. This calls for some care, as one is apt to file away too much and leave a serrated edge. Make a mixture of whitening and glue (or warm pitch), and fill in the hollows of the repoussé with it; leave to dry, then take a little more of the mixture and spread it over the back, pressing it well home and squeezing out all the superfluous material. Bevel over the thin edge till it grips the wooden back firmly and continue to burnish it over till it lies quite smooth and flat. As the front of the handle is not covered, the wood there may be stained as desired; but, if preferred, a piece of thin metal may be faced on before the ornamental back is fixed.

GARDEN FURNITURE.

A COMFORTABLE AND SERVICEABLE SEAT.

TO those who take interest in the upkeep of a garden, large or small, it is always a pleasure to add an accessory that will enhance the general effect of the surroundings. A garden seat, such as sketched here (Fig. 1) will at once suggest itself as a neat and attractive feature that is also useful, and being fairly easy to construct a few notes and diagrams are added to smooth the way for the handy worker.

WOOD.—Teak is the best wood to select for outdoor furniture, owing to its weather-resisting nature; but the seat may be made throughout of deal, well seasoned and sound, to be painted, or of oak, oiled or painted as preferred. Beech or birch can also be pressed into service, but the latter is sometimes apt to be disappointing in course of wear.

DIMENSIONS.—With regard to dimensions these may vary in length from 3 ft. 6 ins. to 6 ft. 0 in., but for the average garden one or a couple of seats 4 ft. long will be found most useful, and at the same time more portable than the larger size. The height is placed at 3 ft. 1 in., and the depth back to front over all say, 2 ft. The height of seat will be 16 ins. from ground, and the height of arms from seat 10 ins. to 11 ins.

The Parts: Back.

BACK LEGS (A.) The back legs will require to be of 2 in. thickness (*i.e.*, 1½ in. net when cleaned up), and can be marked out on a board 3 feet long, taking care to keep the grain in the legs as long as possible. A full width of 2 ins. or 2½ ins. should be held at the part where the seat and under rails enter, but the outward curve of the leg may taper slightly at the ground and to 1½ in. at top, the

face being the same width throughout, 1½ in. A rake of 3 ins. can be allowed.

As indicated at Fig. 3 the back legs will be mortised to receive tenons on seat rails at side and

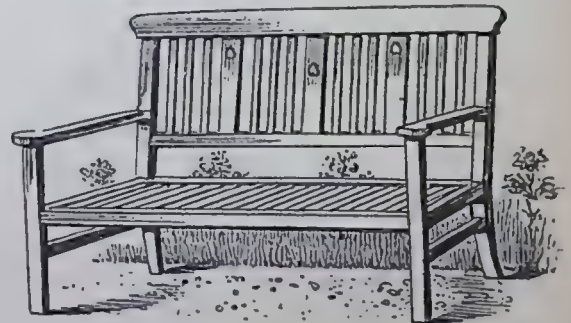


FIG. 1.—GARDEN SEAT.

back, these being mitred to enter as shown in plan L, and then pinned. Mortises are also cut for the rails C and J to enter well home; the mortise for the arm can be cut right through and be wedged. The back leg can also carry a tenon to enter the top rail, D, or may be notched back to brace it up behind by screwing, as Fig. 3.

THE SEAT RAILS (B) will take two lengths of 4 ft. and finish flush with the legs 1½ in. by 1½ in. In addition to being tenoned each end they are intended to be grooved their whole length to receive the seat slats. A groove ¾ in. wide by ¾ in. deep will serve for this, and is shown at M as being ¼ in. below the top face of rail. The corners may be rounded off slightly to weather

A GARDEN SEAT (Continued).

them; or lengths of $\frac{1}{2}$ in. stuff rounded off may be fitted to the rails to butt between the legs. In the latter case the grooving may take the form of a $\frac{3}{8}$ in. rebate, which the rounded lengths (being notched into legs and screwed to the rails) will complete when the slats are laid in.

Between each slat, when in position in the

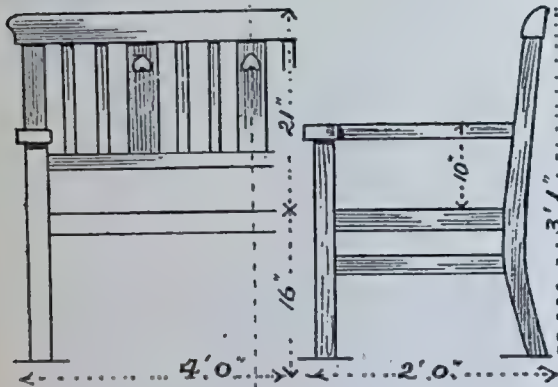


FIG. 2.—HALF FRONT ELEVATION AND END ELEVATION OF GARDEN SEAT.

groove, can be packed a cut of one of the slats, $1\frac{1}{2}$ in. by $\frac{3}{4}$ in. by $\frac{3}{4}$ in. to fill in the groove flush; this will be found a quicker method than chopping away the stuff for each slat to enter.

THE RAIL (C) will require a 4 ft. length of 2 ins. by 2 ins. stuff, tenoned each end, and with the upper edge slotted to receive the stub tenons on panels and slats above.

THE TOP RAIL (D) can be got out of a width of 4 ins. and the length should be 4 ft. 4 ins. The under edge will be bevelled away a trifle towards the back, so that when fitted it is parallel with the seat. The ends are also ogee-shaped, and the face of the rail can be smoothed or chamfered off towards the top to afford a pleasing finish, the under edge having previously been slotted to agree with C, and mortised or housed for the back leg to fit in.

THE PANELS (E), of which three are indicated in Fig. 1, can finish 3 ins. wide by $\frac{1}{2}$ in. thick, and will be 12 ins. long, including stubs; they may be plain or have a neat fretted opening after the manner of Fig. 3.

THE NARROWER SLATS (F) between these panels may be $1\frac{1}{2}$ in. wide by $\frac{1}{2}$ in. thick, twelve being required.

THE FRONT LEGS (G) will each take a length of 2 ft. 3 ins., to be the same width and thickness as back legs. The top ends will carry short tenons to enter the arms, and will also require mortising to receive the seat rails B and H, and the stretcher rails J.

SIDE SEAT RAILS (H) can be got out of lengths of 1 ft. 9 ins., but lengths of 2 ft. are allowed in the cutting list to cover any departure from the sizes given here.

Arms (I) can be $1\frac{1}{2}$ in. thick, and when cut to shape should measure about 3 ins. wide net over all. A sketch plan of the arm is noted at O, Fig. 4, and shows the end cut with a tenon to enter right through back leg and be wedged.

STRETCHER RAILS (J) will stiffen against strain, and at the same time add to the appearance. They are tenoned into position, each end either right through or with a screw inserted aslant from the underside up through the tenon into leg.

Seat.

For the seat about twenty-four slats will be required, to be grooved and packed into position as previously explained. They should finish $1\frac{1}{2}$ in. by $\frac{3}{4}$ in., and may be got out in 2 ft. lengths, so that the waste will come in handy for the packing.

If preferred, these slats can be replaced by laths to be fitted in the manner indicated at P, Fig. 4. These laths can be 2 ins. wide by $\frac{1}{2}$ in. thick, and in fitting it will be advisable to include a stretcher tenoned into front and back seat rails B to support them in the centre.

Should no arms be required to the seat it may finish in the manner indicated at Q, the legs of $2\frac{1}{2}$ ins. by $2\frac{1}{2}$ ins. stuff being chamfered to the ground; or the legs could be turned out of 3 ins. by 3 ins. stuff in simple fashion as at R, with pleasing effect. The capping lath in this case, rounded off as before, will be mitred over the top of the leg as noted.

Finishing.

In fitting together all joints should be well

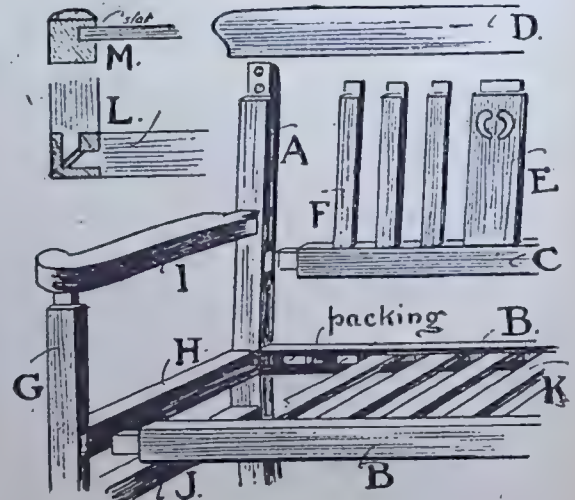


FIG. 3.—METHOD OF FITTING TOGETHER.

painted—that is, put together with paint instead of glue. All edges of main framing should be weathered by chamfering or rounding off to drain them from summer showers, but it is common prudence not to leave a wooden seat out in all

weathers. Three coats of good oil paint should be given if the best yellow deal is used, after which one annual coat will suffice to keep the seat

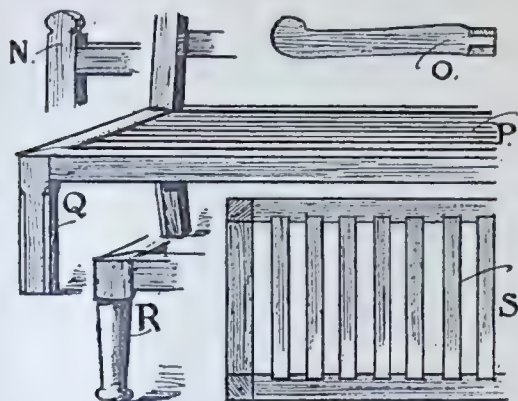


FIG. 4.—DETAILS OF BACK, ARMS AND LEGS, AND PLAN OF SEAT. (Shows also alternative Lath Seat at P.)

fresh looking. Middle green is a good colour for the garden; a pale blue is another, but it may be hinted that if finished in white the seat would be sufficiently neat in design to find a place in the house during the winter months.

Alternative Suggestion.

The two sketches at Fig. 5, by way of alternative suggestions for the back of seat, would work out well in painted finish. The upper one (T) has the uprights scrolled at top (or they could be finished as at N, Fig. 4), and the top rail is also curved with a gouged shaping cut into the under edge by

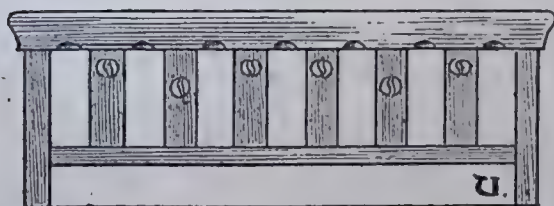
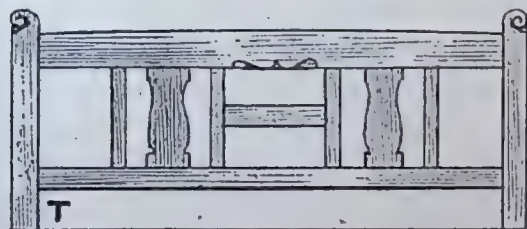


FIG. 5.—ALTERNATIVE SUGGESTIONS FOR BACK OF SEAT.

way of relief in the centre. The slats and panels can be 4 ins. and $1\frac{1}{2}$ in. wide respectively, the centre short rail being $2\frac{1}{4}$ ins. wide, and all $\frac{3}{4}$ in. thick.

The lower back U should have a neat effect in white finish. The panels can be 3 ins. wide, equally spaced, and with a fretted opening in each which should be cleanly cut. The cusped arches between the panels are gouged out as before.

Cutting List.

					Long.	Wide.	Thick.
					ft. in.	in.	in.
A	Two back legs	..	..	..	3 0	x 2	x 2 or 2½
B	Two seat rails	..	..	..	4 0	x 2	x 2
C	One back rail	..	..	..	4 0	x 2	x 2
D	One top rail	..	..	..	4 4	x 4	x 1½ or 1¾
E	Three panels	..	..	..	1 0	x 3	x 1
F	Twelve slats	..	..	..	1 0	x 1½	x 1
G	Two front legs	..	..	..	2 3	x 2	x 2
H	Two side rails	..	..	..	2 0	x 2	x 2
I	Two arms	..	..	..	2 2	x 3	x 1½
J	Two stretchers	..	..	..	2 0	x 2	x 2
K	Twenty-four slats	..	..	..	1 9	x 1½	x 1

In this list all lengths are full, to allow for joints, but width and thicknesses are net.

Holiday Volumes.

"PEEPS AT GREAT RAILWAYS": (1) The London and North Western, by George Eyre-Todd; (2) The North Eastern and the Great Northern, by G. E. Mitton; (3) The Great Western, by Gordon Home; (4) The South Eastern and Chatham, and the London, Brighton and South Coast, by G. E. Mitton. 4 vols., crown 8vo., illustrated, 1s. 6d. each. (Adam & Charles Black, Soho Square, London, W.)

These are nicely produced handbooks, giving particulars not only of the systems of the respective railways dealt with, but also of the districts through which they run. Within recent years interest in our railways has been popularised by the issue of many books—some for boys, others for adults—upon the subject. But Messrs. Black's "Peeps" are more in the nature of guides to districts than descriptions of rolling stock and permanent ways, and the historical and geographical touches are of value. Mr. Gordon Home, however, in his volume on the Great Western, makes use of his expert knowledge to dwell chiefly on the story of the railway itself, devoting only a closing chapter to "where the railway goes." Each volume has a few coloured plates, some of these being from water colour sketches, others from photographs—the latter being the better. Each book has also a map of the system.

Victoria and Albert Museum.

"REVIEW OF THE PRINCIPAL ACQUISITIONS. (1912)." 4 to., 1s., fully illustrated. (His Majesty's Stationery Office).

Among the acquisitions of the South Kensington Museum during 1912 was a panelled room in the Georgian style from Hatton Garden, E.C. A photograph is included in the illustrated Review just issued. Many of the acquisitions noted are of special interest.

Railway Marvels.

"RAILWAY WONDERS OF THE WORLD" a serial in twenty-four fortnightly parts. Parts 5 and 6; 11 ins. by 8 ins., price 7d. net each. (Cassell & Co., Ltd., La Belle Sauvage, London, E.C.)

The photographic reproductions in this serial are remarkably good and of great interest.

WOODCARVING.

SIMPLE FORMS WITH THE V TOOL.

It seems, at the first glance, quite impossible to believe that a design as shown in Fig. 5. can be done with only one or, at the most, two tools. The V is the chief tool, and in fairly expert hands it can be made to do wondrous things. In this case the designs are not troublesome, and may without difficulty be done by beginners. At the same time they will prove of considerable interest to more advanced workers.

suggested, forms a good border; and, by varying the distances apart, a pleasing effect follows. This simple form may be used in many ways, and with the addition of appropriate foliage of similar character, can form designs that are effective and simple in execution.

Fig. 2 is carved in similar manner to Fig. 1, but being triangular can be arranged to fit more spaces than a square member. The central

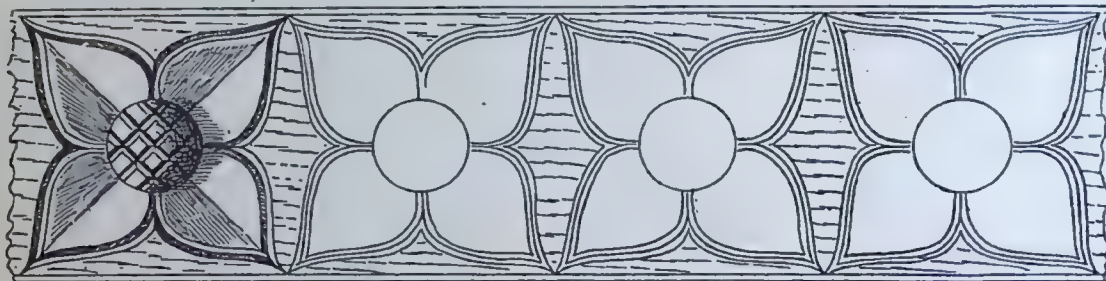


FIG. 1.

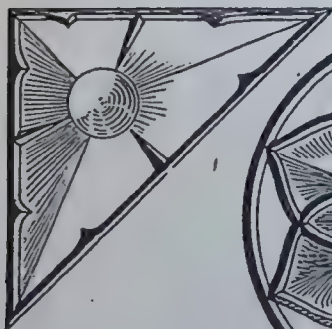


FIG. 2.

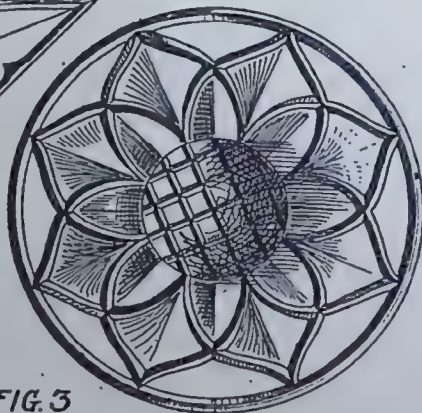


FIG. 3.

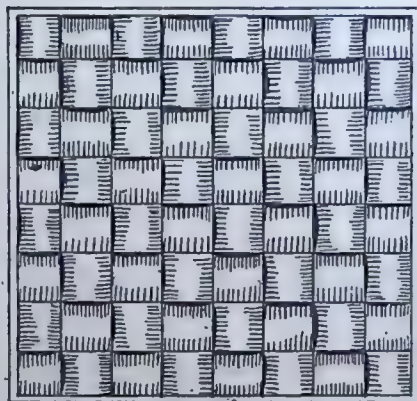


FIG. 4.

SIMPLE FORMS OF WOOD CARVING: V-TOOL WORK.

Fig. 1 shows a flower type, which can be completely done by a V tool of say $\frac{3}{8}$ in. side. V tools, it may be mentioned, are measured on their flat sides to ascertain the size. The outline drawings of the flower give the lines which are traversed by the V-tool. When these outlines are done, run a V cut down the centre of the petals, and shave away the wood on each side of the cut up to the edge of the petals. It is possible that the cutting will have to proceed, in some cases, from the centre, outwards, on account of the grain of the wood. Then, with the flat of the tool, round over the centre of the flower form, and cross it as shown. A little trimming up, if needed, completes the carving.

A repetition of this "four leaved flower," as

button may need a flat gouge (say, a No. 5 by 5-16 in.) to set it in with. Otherwise the V-tool will carve the whole of it. The small serrations are done with the V-tool vertical, making a downward cut.

Fig. 3 is again a conventional floral form; it is cut in exactly the same way as Fig. 1, and the only additional advice that can be tendered is to get the curves quite firm and good in outline.

Fig. 4 is a kind of plaited design that is very useful as filling, or as the treatment for large pieces of ground work. It is done with the V-tool entirely, and reference to the illustration will show how it is done. Cut the lines across the grain first, then the lines that lie with the grain. This divides the whole mass into so many squares,

like a chess board. The flat of the V-tool will cut down these squares, alternately, so that the plaited effect is obtained.

Fig. 5 is a useful design for a photograph frame or a teapot or plant stand. The full sized detail is given at Fig. 5A. The central button is cut with a No. 5 by 5-16 in. flat gouge. The edges

Design in Woodcarving.

While a number of craftsmen have an elementary knowledge of drawing, few have practised it sufficiently to enable them actually to prepare their own designs. There are many who feel that this gift would, however, readily come if they had only some safe guide to direct them as to the basis and appli-

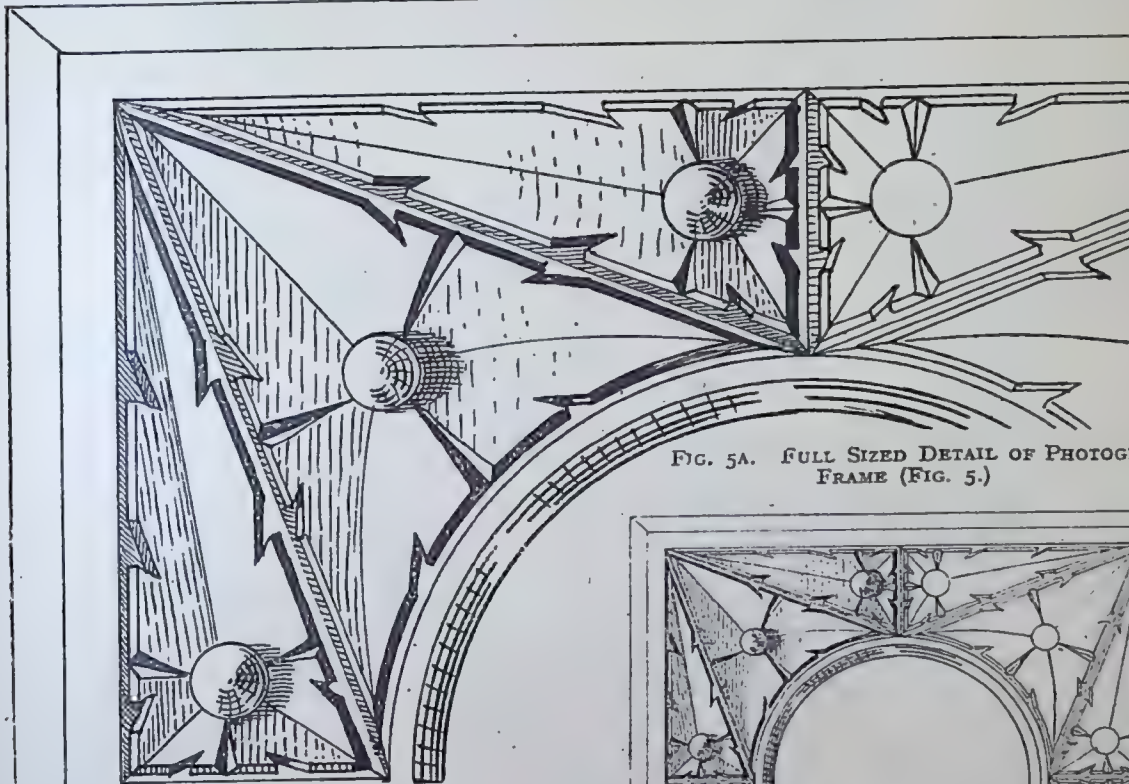


FIG. 5A. FULL SIZED DETAIL OF PHOTOGRAPH FRAME (FIG. 5.)

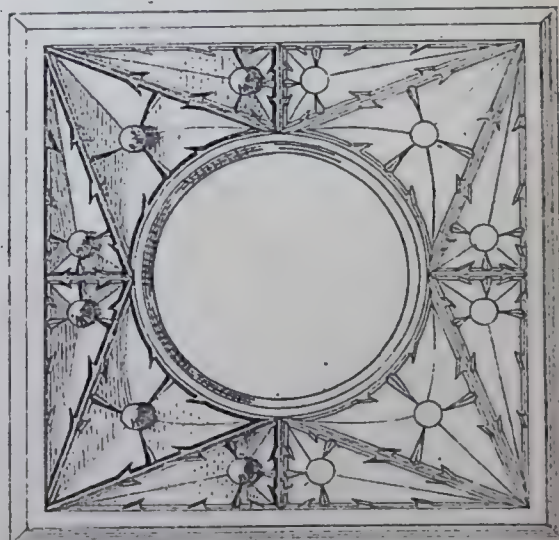


FIG. 5

PHOTOGRAPH FRAME, 8 INS. BY 8 INS.

of the leaves are cut with a V-tool, and where two edges lie close to one another two V-cuts are necessary, leaving a pointed elevation between. The flat gouge may be used to cut the surface of the leaves after the central V-cut has been run down them from tip to button. Care and clean cutting can make of this design a very effective and telling piece of work. The outside edge is chamfered, and the inner edge chamfered or hollowed.

NOTE.—Previous articles in this series on "Simple Forms of Wood Carving" appeared in issues of November, 1912, and January, February, March and May, 1913. These numbers are still obtainable and may be had, price 3d. each, through any newsagent, or direct from the publishers (EVANS BROS., Ltd., Sardinia House, Kingsway, London, W.C.) for 4d. each, post free.

To Loosen Rusted Screws.

Rusted or tight screws holding metal parts together can be loosened by holding a red-hot iron of the proper size on the head of the screw. After cooling, the screws can be turned out easily.

cation of design. So far as woodcarving is concerned, the sixpenny handbook, "Design for Woodcarvers" (WOODWORKER series), meets the woodcarving craftsman's needs. It is not a book of designs, but a clear and simple guide which will help the comparatively inexperienced draughtsman to design or adapt patterns on which he may afterwards work. The handbook may be had for sixpence or post free for sevenpence, from EVANS BROS., Ltd., Sardinia House, Kingsway, W.C.

NURSERY FURNITURE.

THE TABLE.

WHEN furnishing the nursery a serviceable table for meals, lessons and general purposes had better be provided, in addition to any smaller play-tables that may be included in the appointments of the room. Such a table as that sketched (Fig. 1) would be suitable for the purpose, made to a size of 4 ft. 6 ins. by 2 ft. 9 ins.; or, if a smaller size is preferred, 4 ft. by 2 ft. 6 ins. will serve. No drawers are shown, but with a little variation of the construction one can be put at each end.

WOOD.—The wood may be white deal throughout, to be stained and polished, or painted and varnished; or, if a wood less liable to bruise is desired, whitewood may be used for the top and birch for the legs.

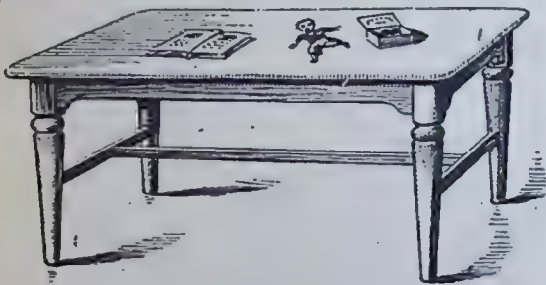


FIG. 1.—NURSERY TABLE.

Description of Parts.

TOP.—For this (B, Fig. 4) four boards 9 ins. wide by 4 ft. 6 ins. by 1 in. will be required, sound well seasoned stuff being carefully picked. Narrower stuff will involve more jointing up, but will minimise the risk of shrinkage. In purchasing the stuff in the rough it will also be remembered that, when planed up, the boards will hold $8\frac{1}{2}$ ins. only, or slightly less, so that allowance has to be made for the cleaning up.

The edges should be shot clean and true so that the contact is flush throughout. They may be plain glue-jointed; but it is preferable to tongue them together, the edges being ploughed for tongues to be inserted as in the section *b*, Fig. 4. When finished, the top can have the outer edges rounded off, the corners being also rounded off 3 ins. each way.

LEGS.—Four pieces of 3 in. by 3 in. stuff 2 ft. 6 ins. long will be wanted. In Fig. 1 these are shown turned to a simple pattern, but they may be tapered and chamfered if preferred. As sharp corners should be absent from the nursery the outer edge of the square block may be rounded or chamfered. This square block (or shoulder, A, Fig. 2) will be mortised to receive tenons on rails, the mortises being cut right through to meet, so that the tenons enter after the manner indicated

in the plan at Fig. 2. Of course the rails might be dowelled to the legs, a method which by some is considered as strong as, and in some cases stronger than, the mortise and tenon; but for the sake of the better practice in cutting and fitting it is better for the amateur to adopt the tenon joint.

IN SETTING OUT THE MORTISES the simplest way for the amateur will be to group the legs together with the face sides outwards, squaring off from these on all sides so that the levels of the mortises agree. Then, if the position of the mortises is marked on the top end grain of the legs, the square lines on the face sides can be continued round the inner sides, these having previously been marked so that the possible mistake of cutting the mortises on the wrong sides may be avoided. This will apply particularly to the legs if tapered, the mortises being cut on the inner or tapered sides. They will finish 6 ins. from top of leg, and the turning or tapering can start at $7\frac{1}{2}$ ins. or so, thus leaving a space of 22 ins. or 23 ins. clear between floor and lower edge of rails.

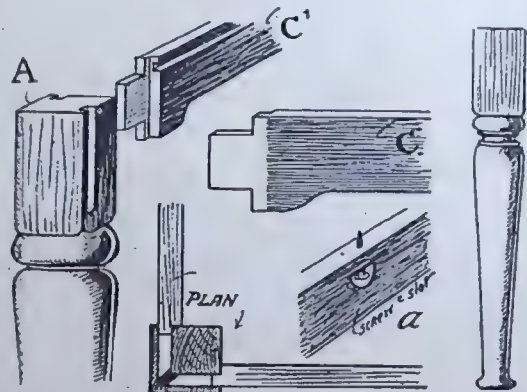


FIG. 2.—DETAILS, SHOWING METHOD OF CONSTRUCTION.

RAILS.—The side rails (C, Fig. 2) will require lengths of stuff 4 ft. 3 ins. to finish 5 ins. wide. They should be $\frac{7}{8}$ ins. thick net, and are shaped up at ends as a slight break from plainness. The tenons are haunched and also bevelled at ends, and will be pinned in position to the legs. If dowelled together the holes of entry should not be made one over the other perpendicularly, but zig-zagged. The same applies to the end rails, which can be finished from lengths of 2 ft. 6 ins. by 5 ins. by 1 in.

STRETCHER RAILS.—The end rails (K, Fig. 5) will be mortised for the tenons on stretcher rail to enter, the end rails also carrying tenons each end to enter the legs. These latter tenons are strengthened with a screw, carefully entered aslant from the under side into

the leg. Size for the rails is $2\frac{1}{2}$ ins. by $1\frac{1}{2}$ ins., the upper edges being rounded off.

Fixing Top to Framing.

With regard to the fixing of top to the framing this may be done by screwing up through thumb slots as indicated at *a*, Fig. 2. It is, however, better to groove the rails as indicated at *C*¹, Figs. 2 and 4, and fix with buttons. The buttons (*J*, Fig. 4) should be of hard wood, say $2\frac{1}{2}$ ins. by $1\frac{1}{2}$ ins. by 1 in., rebated to correspond with the groove in sides so that they may be entered and screwed up to the top. This can be easily done if the top is laid upside down on the bench and the framing placed carefully in position above it, so that the buttons may be pressed into the grooves to be afterwards screwed through firmly to the top. Four to six buttons will answer for the sides and three for each end (see Fig. 3).

If it is considered desirable to stiffen the frame work under the top this can be done by fitting a stretcher (*H*, Fig. 4), 5 ins. by $\frac{3}{4}$ in. or $\frac{7}{8}$ in., to be dovetailed to the rails edgewise. Or the rail may be $2\frac{1}{2}$ ins. to 3 ins. wide, dovetailed into the under edge of rail.

Fitting a Drawer.

FRAMING.—If thought preferable to fit a drawer at one or both ends the single end rail will be replaced by an upper and lower rail in each case, as at Fig. 5. For these the stuff can be $2\frac{1}{2}$ ins. or 3 ins. wide by $\frac{7}{8}$ in. thick, and lengths of 2 ft. 6 ins. will allow for paring. The upper rail (*E*) will be dovetailed each end to the legs and the lower rail or bearer

thick, can then be fitted, both ends being squared to make them an equal length. The back will also be of $\frac{1}{2}$ in. stuff net, and about $\frac{3}{4}$ in. narrower than sides. The bottom edge of front should be grooved $\frac{3}{8}$ in. deep to receive the bottom at about $\frac{1}{4}$ in. from edge. The groove will continue round sides, but the back will finish level with the top of groove and will therefore not need ploughing, the bottom pushing home under it. Hard wood slips are glued under the groove in sides as extra support for the bottom, which projects an inch beyond back to allow for shrinkage. The bottom may be either bevelled or rebated to enter home in the grooved sides and front, and must be perfectly square. Knob handles are best for a nursery table.

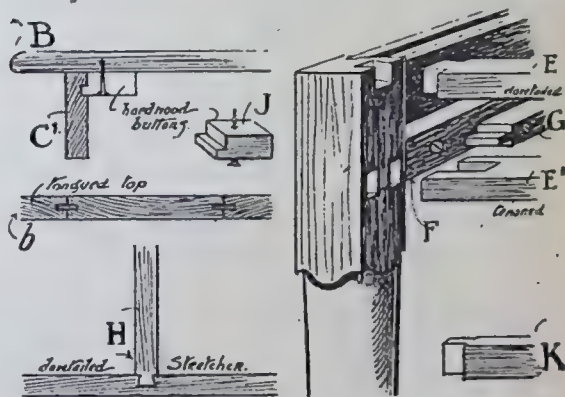


FIG. 4.—FURTHER DETAILS OF CONSTRUCTION. FIG. 5.—METHOD OF FITTING RAILS FOR DRAWER.

List of Parts.

		LONG.	WIDE.	THICK.
A	4 legs	2'6"	x	3"
B	1 top (4 boards) ..	4'6"	x	9"
C	2 side rails	4'3"	x	5"
D	2 end rails	2'6"	x	5"
or, if required for drawers,				
E	4 rails	2'6"	x	3"
F	2 guides	4'3"	x	1 1/2"
G	2 runners	4'3"	x	1 1/2"
H	centre stretcher if required ..	2'6"	x	5"
J	say 18 buttons ..	2 1/2"	x	1 1/2"
Drawers if required.				
	2 fronts	2'6"	x	3 1/2"
	4 sides	2'0"	x	3 1/2"
	2 backs	2'6"	x	3 1/2"
	2 bottoms	2'6"	x	2'0"
	2 muntins	2'6"	x	3"
	grooved slip	14'0"	x	2 1/2"
K	1 stretcher rail ..	4'6"	x	2 1/2"
	2 rails	2'6"	x	1 1/2"

The above list will prove serviceable for reference in getting out the parts, note being taken that, whilst all lengths are full to allow for joints and paring, widths and thicknesses are net finished sizes.

NOTE.—The other articles in this series are:—Toy Cupboard (May issue), Canopy Cradle (June), and Combined Chair and Table (July). These numbers may be obtained through any Newsagent, price 3d. each, or direct from the Publishers (EVANS BROS., Ltd., Sardinia House, Kingsway, London, W.C.), price 4d. each, post free.

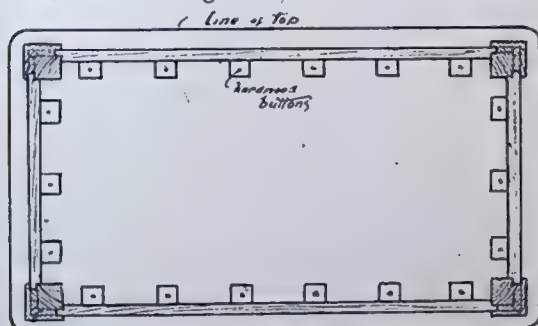


FIG. 3.—PLAN OF TOP, FROM UNDERSIDE, SHOWING CONSTRUCTION.

tenoned well home as *E*¹. The guides (*F*) should be about $1\frac{1}{2}$ in. wide and should finish flush with the inner face of leg so that the drawer travels freely. They may be in one length to butt between the legs and be screwed to side rails, or may be in lengths of 2 ft. or so, two pieces being allowed for each drawer in the cutting list. The bearer rail (*E*) should also be cut to receive the stub tenons on end of the runners (*G*) to enter, the latter being screwed into position.

DRAWER PARTS.—These should not be started till the framework has been put together, otherwise trouble may arise. For the fronts 1 in. stuff should be used, cut to fit the openings. The sides, $\frac{1}{2}$ in.

PANELLING.

6.—HOW TO PANEL A ROOM—DOOR SIDE.

WE will now take in hand the door side of the room opposite the side already done (see June issue). In Fig. 1 we show the panelling as it will appear when fixed, but without the addition of plinth, cornice and architraves. As this side will be too frail to handle if made in one piece, we must arrange it so that it can be framed in one, then taken apart and refixed on the spot.

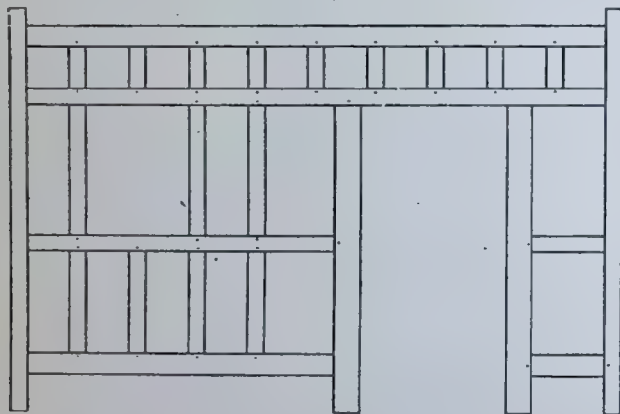


FIG. 1.—ELEVATION OF PANELLING FOR DOOR SIDE OF ROOM.

The doorway gives a good opportunity of dividing up into three parts the frieze, the left side of the doorway, and the small piece on the right. Even by doing this it will also be necessary to leave the outside stile of the frieze and both of the stiles at the doorway loose, although we will show presently how the latter may be fixed at once.

The Frieze.

The frieze panelling (Fig. 4) is almost a repetition of the same part as described in the June article, and it will be built up in the same way. The two rails are mortised and tenoned as Fig. 10, and the lower one will also have to be mortised on the under side as Fig. 9. It will be noticed that, while the three mortises to the right of Fig. 9 (as the rail lies bottom edge upwards) correspond to the first, third and fourth in Fig. 10, the remaining two mortises do not come opposite any on the other edge of the rail. The reason for this is shown by Fig. 1; the doorway stiles do not coincide with the muntins in the frieze, hence these must be kept independent, and must be regulated entirely by the position and width of the doorway.

These stiles are made extra wide, so that the architraves can be fixed to them and still leave an equal width to match the other framing of the panelling. If this were not done the doorway

would be most unsightly. The muntins for the frieze will all be alike, and when tenoned this part can be glued up, pruned and cleaned off.

Left Hand Part (Fig. 2).

The next part to get on with may be the left hand piece, Fig. 2. For this, the bottom rail will be mortised and tenoned as Fig. 8, corresponding to the mortises in the under side of the

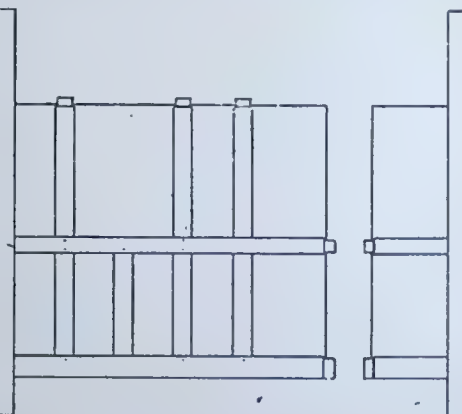


FIG. 2.—PORTIONS AT LEFT AND RIGHT OF DOOR.

frieze, but with one additional mortise. The tenon which comes to the wide stile must be cut to suit.

The dado rail must also be mortised to pair with the under rail, but on the under side only. On the upper edge this rail must exactly pair (as Fig. 7) with the under side of the frieze rail.

The muntins will be the same lengths as those in the side already framed, so as to line with it. The two stiles at the extreme outsides will also be the same as those previously described. It is thus unnecessary to illustrate them here.

Right Hand Part (Fig. 3).

The two short rails on the right of the doorway will require tenoning only, the length from shoulder to shoulder being regulated by the frieze rails. This portion may be fixed together and cleaned off as Fig. 3, leaving the doorway stile loose; or the outer stile may be left loose and the doorway stile fixed. Or, again, both stiles may be put on temporarily, taking them off after the finishing is done. Fig. 12 shows this part with the two stiles on, but not pinned.

Fitting Together.

The whole should be put together temporarily and cleaned off, afterwards being taken apart for convenience of transport. To put together finally, Fig. 2 should first be inserted into the frieze and pinned, then the outer stile fixed on.

Fig. 3 can then be taken in hand and fixed to the frieze, finally putting on the last stile (which ever that may be) and fixing with pins. Any slight inequality at the joints after the final fixing together can be removed with the scraper after the panelling is fixed to the walls—not before, as the act of fixing may to a certain extent upset the surface.

Alternative Method.

With regard to the alternative of framing the panelling so as to permit the doorway stiles to be fixed to the side panelling in the workshop,

be finished further at the shop. The disadvantages are the extra work and the fear that it is not exactly a workmanlike method.

Brass screws should be used; iron may rust, and in time allow the joints to part. In any case pins should be put through the joints, whether tenoned or halved.

NOTE.—The previous articles in this series on Panelling appeared in issues of January, February, March, April and June of this year. These may be obtained through any newsagent, price 3d. each, or direct from the Publishers (Evans Bros., Ltd., Sardinia House, Kingsway, London, W.C.), price 4d. each, post free.

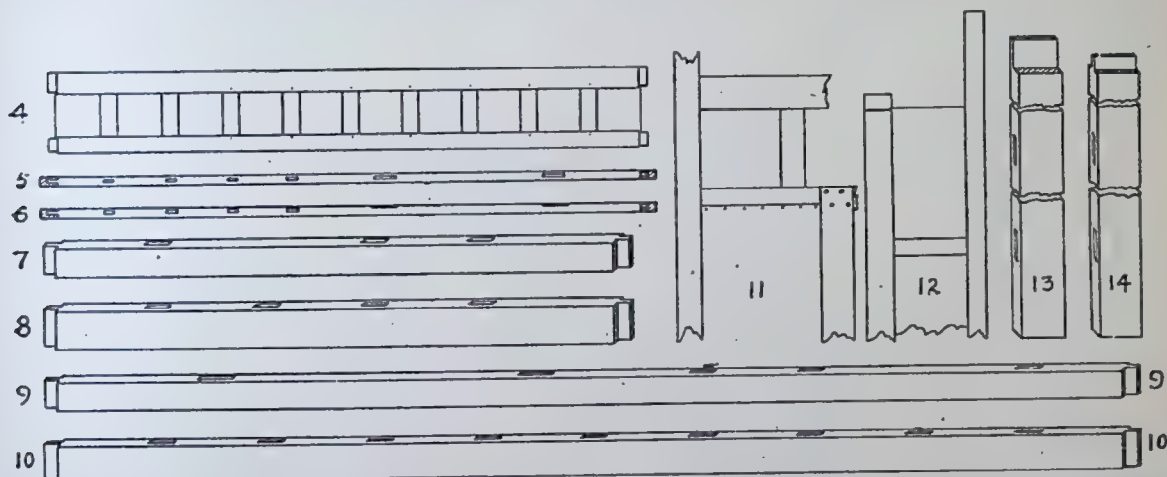


Fig. 4.—Frieze Panelling, separate. Fig. 5.—Section of Lower Frieze Rail (first method). Fig. 6.—Ditto (alternative method). Fig. 7.—Dado Rail of Fig. 2 (right side up). Fig. 8.—Bottom Rail of Fig. 2. Fig. 9.—Lower Rail of Frieze (showing bottom edge). Fig. 10.—Top Rail of Frieze, mortised and tenoned. Fig. 11.—Back of Fig. 3, made by alternative method. Fig. 12.—Showing Fig. 3 with both stiles in position. Fig. 13.—Doorway Stile, halved. Fig. 14.—Doorway Stile, tenoned.

the method is perhaps contrary to the true construction of the panelling; but as this is not apparent when the work is finished, and as adequate strength can be had, it is admissible.

The lower frieze rail, instead of needing mortises to take the doorway stiles, will simply need cutting away at the back to allow the stiles to be halved into them. Thus the appearance at the back will be as Fig. 11; and the stile, instead of being tenoned to fit into the rail, as Fig. 14, will be halved as Fig. 13. The rail must be cut away at the back, and the stile at the front, and only about one-third of the former and two-thirds of the latter should be cut.

When fixed together with mortise and tenon only, the frieze rail in section will be as Fig. 5; but if the stiles are halved in as just described, the section will be as Fig. 6. Not only this, but by the latter method the back of the groove on the frieze rail must be removed to allow the upper panels of Figs. 2 and 3 to pass into their respective positions, being afterwards fixed with screws, as in Fig. 11. On the whole there is more work in this alternative method than in the other. The advantage is that the work may

Joints for Woodwork.

The amateur who attempts home carpentry for the first time is at once faced with his own lack of knowledge of even the most ordinary joints used in woodwork. He has probably no teacher to whom he may turn for instruction, and is thus driven back on his own resources. It is to such a man that the sixpenny handbook, "Woodwork Joints: How to Make and Where to Use Them," in THE WOODWORKER series, will be of value.

What the amateur really requires is a pocket guide which clearly describes all kinds of joints used in carpentry and joinery, showing how to set them out and for what purposes they are best suited. Mortise and tenon joints, lap joints, dove-tailed joints, glue joints, scarfing joints and others are explained, and in a few words and by means of 137 illustrations the construction and uses are explained in a thorough and practical manner. If the worker masters everything that this handbook teaches him, he can face any piece of home carpentry work, no matter how formidable, without the slightest hesitation. Many who are now expert woodworkers have practically taught themselves from this little volume.

The book may be had for sixpence, or post free for sevenpence from EVANS BROS., Ltd., Sardinia House, Kingsway, London, W.C.

GARDEN TOOLS.

HOW TO MAKE AND REPAIR THEM.

THE repair of garden tools should prove useful and interesting to a large number of our readers at the present time, especially those who live in country districts where ready made handles, etc., cannot be easily obtained, and where, in such cases, it is cheaper and quicker to make them.

Spade or Fork Handle.

A very common casualty in the garden is the breaking of a fork or spade handle, and it is by no means difficult to make a new one. The finished shape required is shown in front and side elevations in Figs. 1 and 2. To make it we require a piece of tough ash, 27 ins. long, 5 ins. wide, and $1\frac{1}{2}$ in. thick; on this the shape should be marked out as in Fig. 3, and in the angles holes bored as shown. From these holes it is easy to start the saw and cut to shape.

From Fig. 2 it will be seen that the handle is curved flatways at the bottom end, and as this

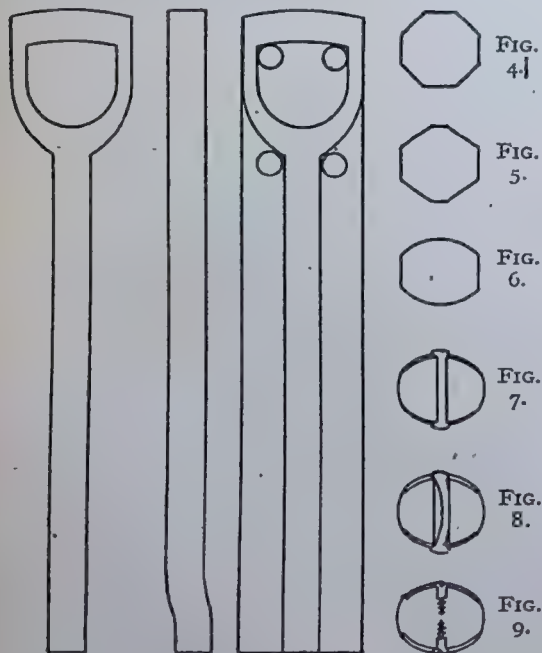
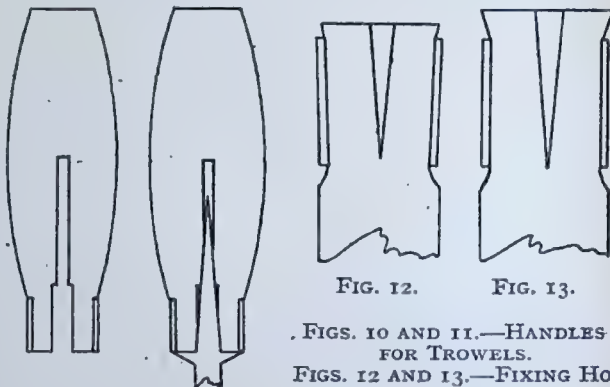


FIG. 1. FIG. 2. FIG. 3.
MAKING A SPADE OR FORK HANDLE.

would mean thicker wood if cut out of the solid, we can get over it more easily by sticking a piece on if for a spade, while for a fork we can dispense with it.

ROUNDING THE HANDLE.—The straight part of the handle and the hand grip require rounding; the other parts will only want easing off at the

corners. To make a good job of the rounded part it will be necessary to work the handle up truly square. Then take off the corners, bringing it to the section as Fig. 4; finally



FIGS. 10 AND 11.—HANDLES
FOR TROWELS.
FIGS. 12 AND 13.—FIXING HOE
HANDLES.

the sharp corners can easily be taken off, bringing it to a comparatively true round. Unless the taking off the corners is done evenly it will be impossible to get a true round, and the finished handle will be far from a credit to the maker.

The eased off parts round the other portion of the handle will be done in the same way, making them into a flat round in section, and merging them neatly into the round parts.

Fitting Handle.

The part which fits into the socket of the spade (or fork) must be bevelled as Fig. 5, and then rounded like Fig. 6; it can then be gradually fitted into the socket of the tool, cutting away the surplus wood, where it shows the pressure of the iron each time it is fitted, until it enters the tool to the full depth of the socket.

A readier way of fitting the handle would be by heating the socket red hot and then to burn away the surplus wood by contact; but this is bad for the spade and bad for the handle, as when fitted in this way handles almost invariably become loose after being in use a short time.

After fitting, the handle must be fixed in position with rivets, and in boring for these see that the hole is the correct size to take them, so that when riveted up they will be as Fig. 7; if the hole is too large, the result when riveted will be as Fig. 8, and the rivets will be of little use in holding the handle in position.

If preferred the handle may be fixed in with a screw from each side, as Fig. 9; but screws are less satisfactory than rivets if the latter are properly inserted.

Trowel Handles, etc.

When putting new handles to trowels and similar tools, where the fixing is done by the insertion of the tang of the tool into the shaped handle, the hole should be bored in two different sizes (as Fig. 10), boring the larger hole first. Continue to the depth required—even a little deeper still, as this is a safeguard against splitting.

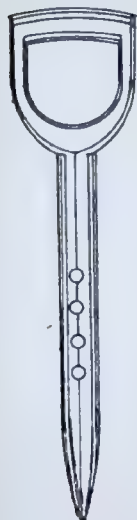


FIG. 14.—DIBBER FROM OLD SPADE.

and bit is used, the same thing can be done in effect by turning the brace in half circles only, as if it were a ratchet.

Good handles can be made by using a block of wood for the purpose, inserting the tool while the wood is in the rough and shaping it afterwards, thus ensuring straightness. Ash is the best wood for these handles. Fig. 11 shows the section after the handle is inserted.

Handles for Hoes.

In fitting handles to tools such as hoes, etc., which are provided with a socket, the latter should be largest on the side opposite to that on which the handle enters, so that when the latter is in its place and wedged up it will be as Fig. 12. If it is found that the socket is parallel, the handle should be left projecting a good distance, so that when the wedge is driven tightly in it will expand over the metal as shown in Fig. 13, and will require considerable force to withdraw it.

"Dibbers."

Old spade handles may be utilised for "dibbers" by sharpening them as Fig. 14, and the depth of the holes may be gauged by boring a series of holes in them as shown. In sharpening, the point should not be made too fine, but somewhat blunt as in the drawing.

Making a Rake.

A serviceable rake can be easily made as shown in Figs. 15 to 18. Fig. 15 is the main part of the rake head, bored ready to receive the teeth. These are simply stout nails, 5 ins. long, which form a rake with teeth $3\frac{1}{2}$ ins. long. The holes should be bored in two sizes as shown in Fig. 16.

After the nails are inserted, a cap is screwed over the heads as in Fig. 17, thus effectually holding the teeth in position and giving additional strength to the rake head. Two holes to take the handle of the rake must be bored through the

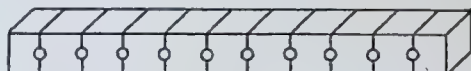


FIG. 15.



FIG. 16.

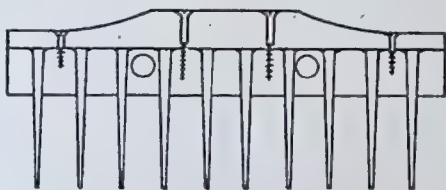


FIG. 17.
SHOWING RAKE HEAD, WITH CAP ON.

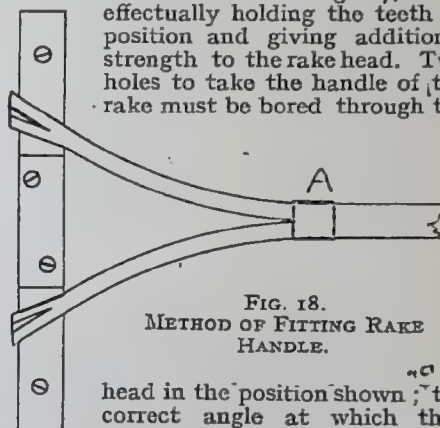


FIG. 18.
METHOD OF FITTING RAKE HANDLE.

head in the position shown; the correct angle at which they should be made is given in Fig. 18. The handle is formed from

a tough pole, split down part of its length with the saw, and prevented from splitting too far by a ferrule as at A.

Wedges as at Fig. 18 will fix the head on; and the rake thus made will be found convenient in use and lasting.

PRIZE COMPETITION RESULTS.

WE congratulate the prize winners of our July Prize Competition. The results showed that our readers are keenly interested in these trials of skill. The large numbers who entered the competition could not all win prizes this time, but other opportunities will occur from month to month. Be sure to read the September issue and look for the very interesting competition which is to be announced; it may be the one for which you have special ability to win.

FIRST PRIZE, One Guinea—

F. J. GARDINER, Mill Street, Kidlington, Oxford.

SECOND PRIZE, Half-a-Guinea—

V. VERITY, 9, Oakhurst Grove, East Dulwich.

THIRD PRIZE, Seven Shillings and Sixpence—

HENRY J. HALLET, 22, South Street, Greenwich.

FOURTH PRIZE, Five Shillings—

G. PARRY, Hagghenden, Bembridge, Isle of Wight.

ELEMENTARY WOODWORK

FOR THE AMATEUR AND THE MANUAL TRAINING ROOM.

HOW TO USE THE HAND SAW.

THE Handsaw is probably the most commonly used of any kind of saw, and it is to be found in most households. Like all other woodworking tools there is a right and wrong way of using it, and for the best results correct methods must be employed.

In the first place no saw will cut properly unless it is sharp, but as saw sharpening and setting is almost a trade in itself we do not propose to suggest that the beginner undertakes it.

It is possible to obtain a notched strip of iron fitted with a handle for the low sum of 6½d., but it cannot truthfully be called a saw. A really serviceable handsaw suitable for an amateur may be purchased for about 3s. 6d.; it will be what is known as second quality and about 26 ins. long. The edge of a saw should be carefully protected and the surface coated with tallow, vaseline or oil to prevent rust.

The handsaw is generally used for sawing along the grain, but is also used for cutting across the grain in the case of thick wood. For sawing down long planks a carpenter would use a coarse saw known as a "rip," but it is hardly probable that such a tool would be needed by the average amateur.

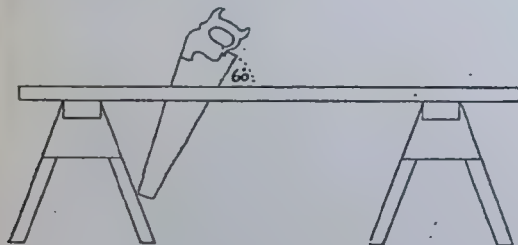


FIG.1

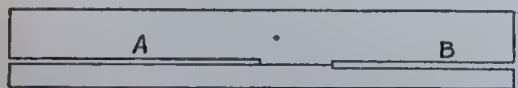


FIG.2.

HOW TO USE THE HAND SAW.

We will suppose that it is necessary to saw a strip off a plank of 1 in. wood; therefore we must first place the board on a pair of sawing stools or other convenient stands; boxes about 2 ft. high will do. A distinct pencil mark must be made to indicate the cut.

POSITION FOR SAWING.—Two difficulties are commonly experienced by the beginner. One is starting the cut and the other keeping it straight. The correct position for sawing is the first thing to consider, and this may be attained by placing the right knee on the board and so leaning over the wood that the upper edge of the saw blade arm, hand and eye are in the same plane or straight line. This is most important.

To COMMENCE THE CUT, place the thumb of the left hand against the line and place the saw against it; next draw the saw upwards, allowing its weight to make a slight incision in the edge of the wood. There

need be no fear that the thumb will be cut, for no pressure should be exerted on the blade, just a slow movement of the saw upwards. When the right hand has been thus raised as high as convenient the saw should be pushed right down at an angle of about 60 degrees. There is no need to exert a lot of pressure in the downward stroke. Many amateurs make the mistake of pushing the teeth of the saw into the wood as well as pushing it through. There is not the slightest need to do this, for the weight of the saw itself is sufficient to make the cut, and the only pressure required is along the angle at which the saw is held, as indicated at Fig. 1.

Hints on Sawing.

STRAIGHT SAWING.—To keep the sawing straight it is only necessary to retain the correct position. It is difficult to make the saw leave the line if the eye is directly above it during the whole of the cut.

A considerable help in holding the saw is to place the first finger straight along the handle and pointing to the direction of the cut, thus leaving the remaining three fingers to grasp the handle.

The whole length of the saw should be used as much as possible, for it requires no more labour to use the greater number of the teeth at one stroke than a few with many short strokes; using a saw in the latter method is often the cause of the saw leaving the line.

THE SAW KERF.—An important point to consider in sawing is the position of the saw in relation to the line, for it is not sufficient to make a pencil line and then saw along it. It must be remembered that the saw cut has a thickness and cuts away a certain amount of wood. This space is termed the saw kerf and may be from ⅛ in. to 3-16 in. wide. It will thus be easily understood that this amount of waste, if taken out of the wrong place, may make a difference in the width of the sawn strip. The illustration at Fig. 2, which will make this clear, indicates a board marked along one edge with two saw cuts. A is correct, B incorrect.

BINDING.—When sawing a long cut and the saw binds or sticks in the cut it is generally advisable to insert a thin wedge to open the kerf a little.

How to Make a Sawing Stool.

IF it is necessary to saw down long boards, a pair of sawing stools is almost indispensable, and as they may be easily and cheaply made there is no reason why the amateur woodworker should not provide himself with them. It will be seen in the front and side views given that 1 in. wood is used, and that the width of the wood is not more than 6 ins. wide.

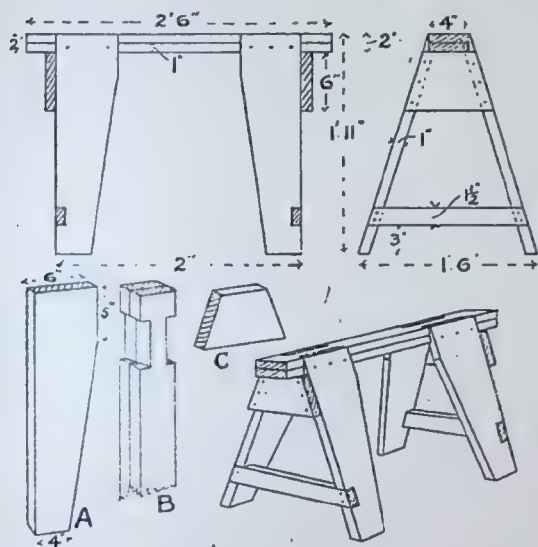
TOP.—Commencing with the top, saw out two 30 in. lengths to 4 ins. wide, the two narrow strips being used up later on. Nail the two lengths together, and cut slots in the ends as shown at B, the distance from the end being 3 ins. and the length 6 ins.

THE LEGS are 2 ft. long, shaped as at A. The correct

amount of slope should be obtained by setting out the end view to full size, measurements as indicated.

The end blocks C should be 6 ins. wide, the exact shape obtained as for legs.

The two narrow strips left from the top must be let in the legs and then the whole thing nailed up.



A USEFUL SAWING STOOL.

If a suitable piece of 2 in. wood is available it would be an advantage to make the top solid, but the double thickness will answer quite well.

A Round-Top Table.

THE round-top table is usually considered as being too difficult in construction for the beginner.

This is true when mortise and tenon joints are used in the framing, but in the design shown there are no difficult joints, and the work may be done by any one who can use a few tools.

THE LEGS and connecting pieces are all made from 2 in. by 2 in. wood, which may be planed down from 2½ in. by 2½ in. stuff, or it may be purchased machine-planed. We shall need twenty feet of the 2 in. by 2 in. wood, and in ordering it specify 2½ in. by 2½ in. unplaned or planed as desired, for it must be remembered that machine-planed wood is always quoted at the size it was before being planed.

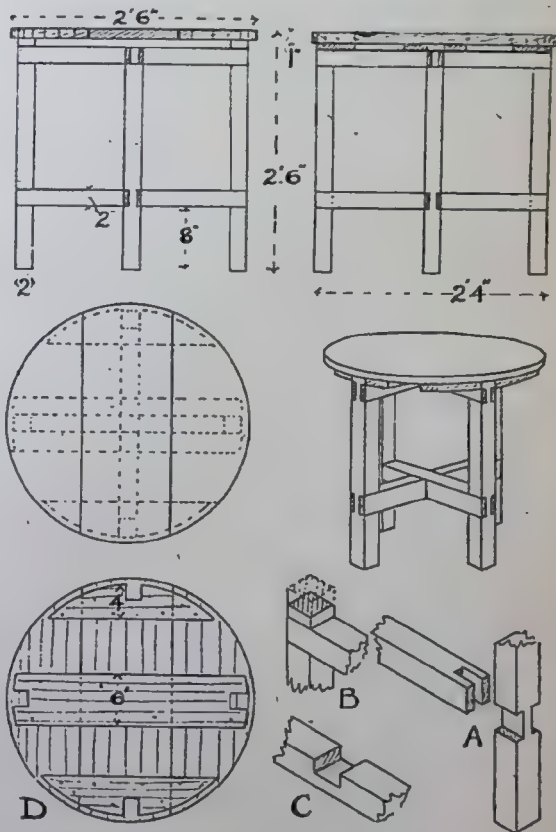
Four lengths, each 2 ft. 7 ins., should be cut off for the legs; they should be placed together so that the grooves may be accurately marked out. A line should be marked off ½ in. from one end, another 8 ins., and again 2 ins. above. Next measure 2 ft. 5 ins. from the first line, then 1 in. and then 2 ins. below. The lines thus obtained should be carried all round each piece, and just where the wood is cut out the lines should be cut with a sharp knife. The reason for the cut line is that it is much easier to saw truly against a cut line than a pencil one. The correct depth (a third of the thickness) is easily marked out with a gauge, or failing one a pencil may be used in conjunction with a rule.

THE GROOVES may now be sawn down on each side

and cut out with a chisel, but care should be taken to make quite sure that grooves are not too wide. There will be about 2½ ins. above the top groove, which should be left until after the connecting piece is fitted in as indicated at B. The four connecting pieces should be cut to 2 ft. 5 ins. long, and marked off to a length of 2 ft. 4 ins., the ends being marked out, sawn down and cut to the shape shown at A. In the middle of each piece it will be necessary to cut a 2 in. by 1 in. groove as indicated at C; this will enable two pieces to be fitted together at right angles.

THE JOINTS should now be glued up with hot thin glue and driven up quite tightly with a mallet, the surplus glue being wiped off at once.

THE TOP is composed of three lengths of 1 in. wood, glued together, an 11 in. board being required. The under pieces, as shown at D, are necessary to prevent



A ROUND-TOP TABLE

the wood warping, and are either screwed or nailed to the top pieces. If care is used in setting out the material the pieces for the top and under pieces may be cut from an 11 ft. length of 1 in. by 1 in. board.

FINISH.—The most suitable finish for the table is stain and wax polish, which should be applied before the top is screwed on; when ready for the latter operation four holes should be bored about 3 ins. from the legs in the top connecting pieces, the screws being 3 ins.

TEACHER'S CERTIFICATE.

City and Guilds of London Institute.

In connection with the recent examinations for Teacher's Certificate of the City and Guilds of London Institute, we give here the questions set in the final drawing examination and add the solutions to questions 1 and 2.

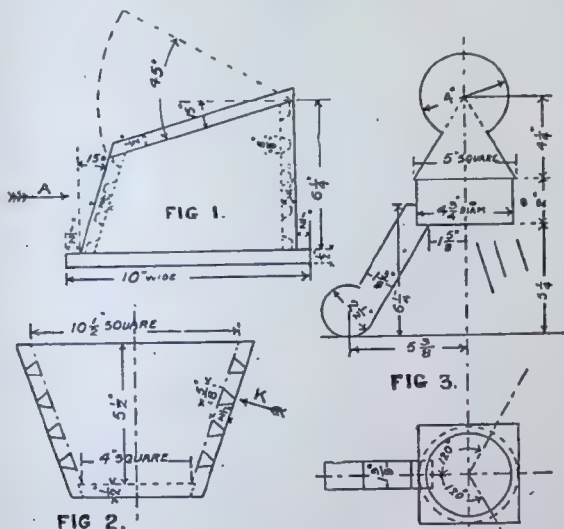
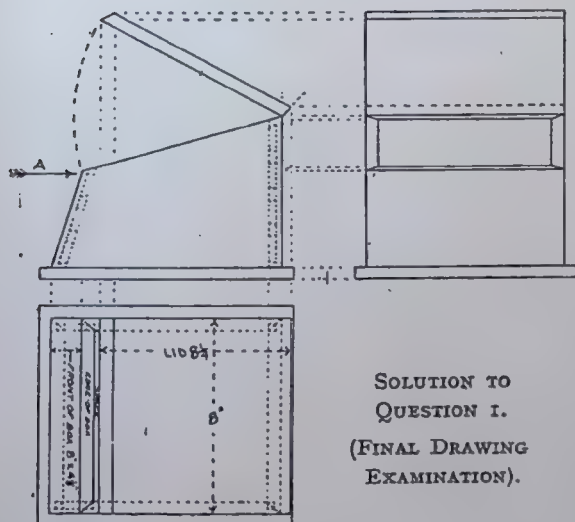


FIG. 2.

FIG. 3.

DRAWING EXAMINATION: THE QUESTIONS.



QUESTION 1.—Box with sloping front and lid (Fig. 1). The length of the base is 9 ins., and the uniform length of the box and lid is 8 ins. in a direction at right angles to those given on the drawing. Draw

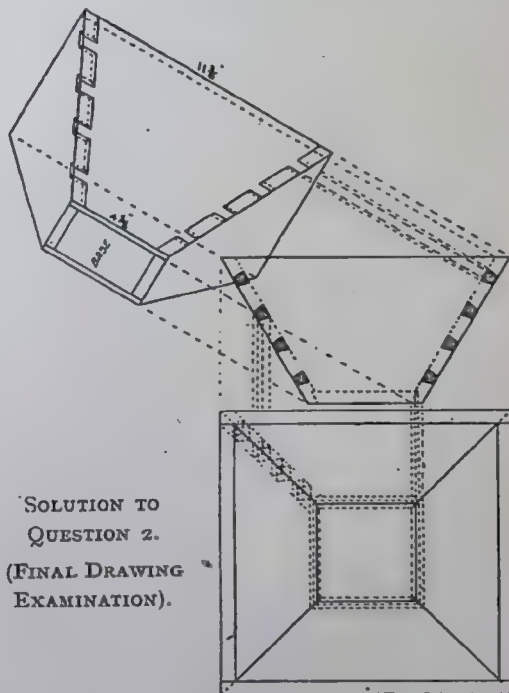
the elevation given to a scale of half full size, with the lid open at 45°.

Give the dimensions of the lid and front of box. Show mitred and housed dovetail joints, using your judgment in regard to dimensions which are not given. Draw a plan of the box and lid, and an end view looking in direction of arrow A.

QUESTION 2.—Hollow square flower stand (Fig. 2). Draw the elevation given and project from it a plan looking from the top.

Draw a view of the side of the stand when looking in the direction of the arrow K, and fully dimension this view. Show dovetail joints, not mitred, using your judgment in regard to dimensions which are not given. Scale, half full size.

QUESTION 3.—Geometric model (Fig. 3). Draw and complete the plan and elevation of the model to a scale of half full size. Leave your constructions on your drawing paper for the intersection of the sphere and square pyramid and for the projections of the feet and legs. Three hours allowed.



Solutions to Questions 1 and 2.

The solutions to two of these questions we give. With regard to Question 1, the joint asked for was anticipated in our "Hints to Students" in the April issue, where a sketch of the joint is illustrated on page 79.

In the case of Question 2, all that is necessary is to show the development of dovetails in view of side looking in direction of arrow K. It is not essential to repeat dovetails at every corner.

The solution to Question 3 which, owing to want of space, we are unable to give here, could be shown in two parts. The intersection of sphere and pyramid could be worked as a separate question to prevent confusion by multiplicity of lines.

THE QUESTION BOX.

ILLUSTRATED REPLIES TO READERS' QUERIES.

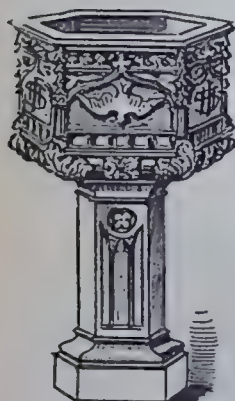
QUESTIONS of general interest dealing with any branch of woodwork or handicraft will be answered in these pages. Readers, however, will kindly note:—(1) As the Editor may desire to reply by post a stamped addressed envelope (not a postcard) must in every case be enclosed. (2) No query can be dealt with unless name and full address of sender is enclosed. Names are not printed. (3) Questions will be answered as early as possible after receipt, but when sketches have to be prepared, or when research has to be made, a short interval must elapse. The insertion of Replies cannot be guaranteed, but Replies of general interest will be given when space permits.

NOTE.—With each query must be sent a "Question Box" Coupon. (See page 3 of Cover). All queries to be addressed: Editor, WOODWORKER AND ART CRAFTSMAN, Sardinia House, Kingsway, London, W.C.

Church Font.

[401] F. T. E. (West Bromwich) writes: "As I have to make a font for a small mission church could you give me an idea of a design, with carved work? What wood should I use?"

REPLY.—We offer a suggestion for the font. You do not give dimensions, but the usual height is about 3 ft. 6 ins., and the width would be about 2 ft. Oak, carefully selected, sound and dry, would be best for your purpose. The panels can be of 1 in. stuff, mitred up, keyed and stiffened with three-quarter columns covering the joints. The capping mould will be mitred up and screwed in position above, and the cover if



CHURCH FONT.
(No. 401).

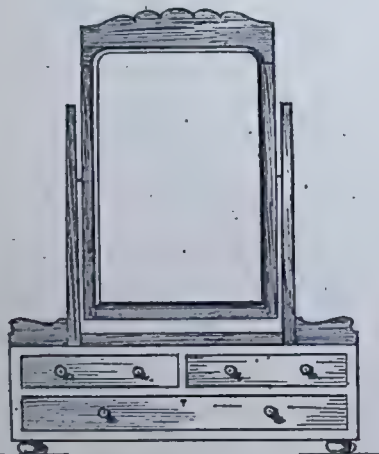


FIG. 1.—DRESSING GLASS (No. 402).

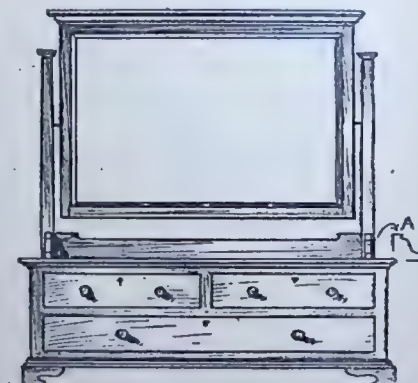


FIG. 2.—DRESSING GLASS (No. 402).

required can be either carved or fitted with beaten iron mounts and ring. Moulds above and below the shaft and base are mitred up in the same way. The shaft, built up in six sides and carved, could be replaced by triple columns and bases if you preferred. A lead tank, plug, washer and lead water pipe can be fitted. We suggest your making the acquaintance of a friendly joiner or cabinet maker who could supply you with just the right stuff for the work. A look round at a few churches should give you your detail.

Dressing Glass.

[402] A. T. (Greenock) writes:—"Could you give me a sketch of a mirror to sit on top of chest of drawers, size 33 ins. by 21 ins. I want to put three drawers in the bottom (two small ones and a bigger one below). A frame for a mirror 24 ins. by 15 ins. would do."

REPLY.—As you do not state whether the 2 ft. length of mirror is to be vertical or horizontal we offer a suggestion each way. The mirror is shown with a

1 in. bevel to the size 24 ins. by 15 ins. If the chest is about 2 ft. 9 ins. high Fig. 1 would be suitable. If taller Fig. 2 would work out more serviceably. Mirror frame may show 1½ in. wide on face by 1 in. thick net. The standards supporting the frame can be 1½ in. square, tapering upwards to ¾ in. by ¾ in. The framing between the standards should be of ¾ in. thickness. Depth of drawer case is 8 ins., dovetailed together of 1 in. stuff; or if hardwood is used ¾ in. net thickness will do for the top, bottom and partitions, with 1 in. ends. Drawer fronts should be 1 in. hardwood; sides ¾ in. or ½ in.; backs ½ in.; bottoms ½ in. thick. Small brass or wood handles are

indicated to the drawers, with lock and key to each. The top of glass frame in Fig. 1 can be cut from a width of 5 ins., to include the rounded corners, to dowel down on to the uprights, and a couple of wood or brass ball feet can be fitted. The capping mould to mirror frames of Fig. 2 should be ¾ in., with ½ in. moulded caps to the standards. The small brackets indicated at A can be fitted to either design, and will assist to keep the whole thing rigid. The shaped feet in Fig. 2 would be 2 ins. high, mitred at corners

Writing Table.

[403] H. F. (Derby) has a supply of good oak and wishes to make a writing table. He asks if we have a working design.

REPLY.—In our issue for January, 1911, we had an article on a very fine pedestal writing table, size 4 ft. 6 ins. over top. The full sized details were given on the Supplement accompanying that number. The design is more advanced than you probably require,

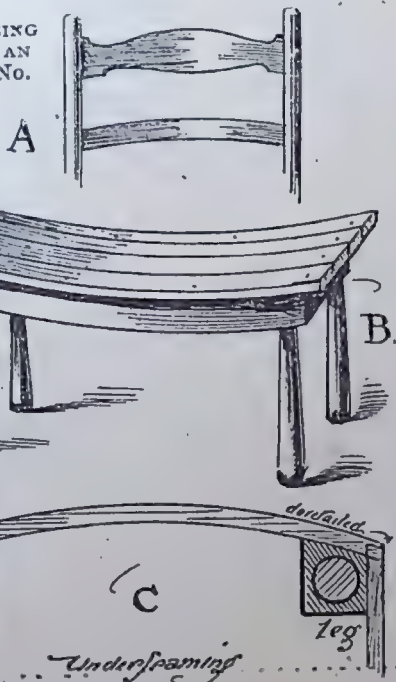
but it is capable of simplification in detail without alteration of the general outline. You mention that you like the knee-hole type of table. The one we refer to is a pedestal one, but as the pedestals are open at the floor (that is, with short feet instead of a solid base) we think it will suit your purpose. It could be carried out in oak, and the size could, if you desired, be reduced to 4 ft. in length. The design Supplement may be had for 7d. post free from EVANS BROS., LTD., Sardinia House, Kingsway, London, W.C.

Making Use of Wood from Old Barrels.

[404] G. F. B. (Rotherham) writes:—"I have an old oak tub, the wood in sound condition. The boards are 32 ins. long, 5 ins. wide at centre and 4 ins. wide at ends. Can you offer any suggestion as to how I may use these?"

REPLY.—You could break up your tub and with a little easing and cutting use the stuff in several ways. CHAIRS.—The shaped boards cut in two would give you suitable lengths for making the slats in the back of a chair of the "Ladder back" type. As shown at A the top slat can be shaped from a piece 3 ins. wide or so and three or four plainer slats can be fitted below, say 1½ in. wide, the height of chair back being 24 ins. Extra stuff would have to be found for legs, but you might get the seat framing out of the tub bottom. SEAT.—Or you could work out a seat after the sketch at B. As shown at C the front and back rails can be dovetailed to square sides, after the manner of a drawer, and will require to be cut out to receive the curved spars forming the seat. The two inner spars are planed parallel for the jointing up, but the two outer ones retain their extra width in the centre.

FIG. 1.—USING
OAK FROM AN
OLD TUB (No.
404).



Blocks can be fitted to the inner angles as shown, and the legs can be tapped to screw in. Such legs as those shown can be easily made by hand, but something better in detail can be fitted if you or a friend happens to have a lathe.

FLOWER STAND.—We also add at Fig. 2 another suggestion of a kind that might be found useful for a garden or conservatory. The legs will use up four of the spars

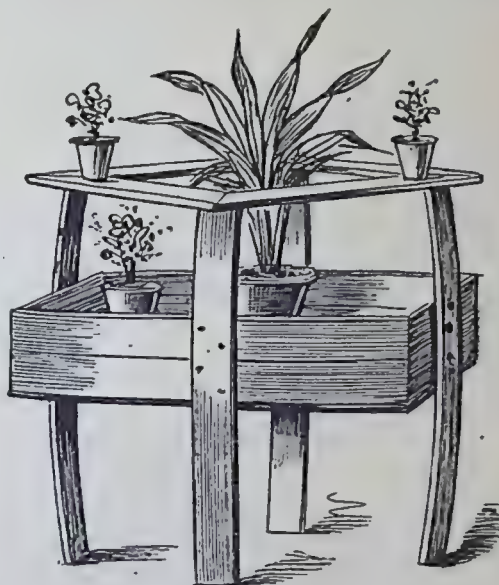
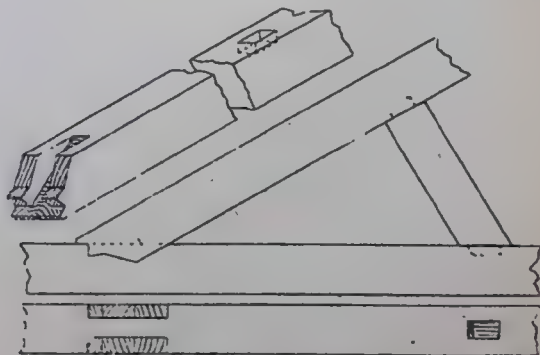


FIG. 2.—OAK FLOWER STAND MADE FROM OLD TUB (No. 404).

in their full length (32 ins.) planed parallel, and the box framing can be dovetailed together, a little packing being possibly necessary between the legs and box sides. The upper framing can be mitred up and screwed to the leg tops. The wood of any old barrels or tubs (not necessarily oak) may be used in one or other of these ways.

City and Guilds of London Examinations

[405] G. A. (Liverpool), referring to the first year's Drawing Examination for Teacher's Certificate, Question 3 ("Bridle Joint"), points out that, according to the elevation given on the paper, the joint indicated



ALTERNATIVE SOLUTION TO "BRIDLE-JOINT"
QUESTION. (No. 405).

a mortise and tenon, while the plan showed a bridle joint. He adds that it would be interesting to know if there was an error in the question, and what was

THE QUESTION BOX (Continued).

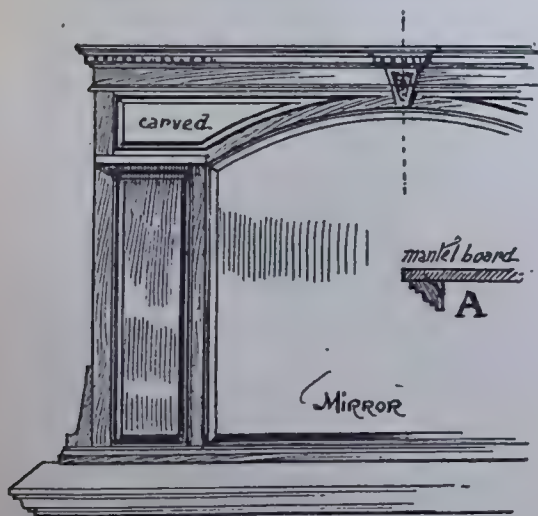
really wanted. Several other readers have written us on this point.

REPLY.—In the solution we offered in our June issue we drew attention to the misleading character of the question, noting that although the joint shown in the elevation was a mortise and tenon one it was termed a bridle joint. Our solution was based on the elevation and was shown accordingly. The alternative solution (assuming the *plan* to be correct) we give here. We should say that, provided the candidate worked either solution correctly, and clearly showed that he realised that, in the drawing provided, the elevation and plan did not agree, he would obtain full marks.

Overmantel and Mantel Shelf.

[406] G. B. (Woodford) has a mantelpiece with shelf 3 ft. 7 ins. by 7 ins. He wishes to cover this with a mantel board, with overmantel above. He indicates a design and asks for particulars.

The length to allow for the mantel board will be 3 ft. 10 ins., allowing for a moulding $1\frac{1}{2}$ in. by 1 in. wide to be screwed through thumb slots under front and end edges (see A). We note the pencil sketch you enclose and think you might work out your overmantel as shown here. Mirror may be 28 ins. wide by 24 ins. high in centre. The side panels show $4\frac{1}{2}$ ins. wide, bevelled, and would offer a good opportunity for a little carving. The cornice is shown dentilled, and broken in centre with a panelled and carved key. The spandrel panels can be carved, and the shallow shelf screwed through from the back; or, if a wider shelf is preferred, it can be supported on brackets screwed to uprights. Outer uprights are 2 ft. 6 ins. by $1\frac{1}{2}$ in. by 1 in.; inner uprights, 2 ft. by $1\frac{1}{2}$ in. by 1 in.; cornice mould, $1\frac{1}{2}$ in. by $1\frac{1}{2}$ in. by 4 ft. 6 ins., to allow for



OVERMANTEL DESIGN (No. 406).

mitreing; top rail (frieze) 2 ft. 7 ins. by 3 ins. by 1 in. shelf rail, 3 ft. 7 ins. by $1\frac{1}{2}$ ins. by 1 in.; shelf, $7\frac{1}{2}$ ins. by 4 ins. by $\frac{1}{2}$ in.; base, 3 ft. 10 ins. by $1\frac{1}{2}$ in. by $1\frac{1}{2}$ in.; panels (side), 1 ft. 9 ins. by 6 ins. by $\frac{1}{2}$ in.; spandrels,

18 ins. by 6 ins. by $\frac{1}{2}$ in.; key, 5 ins. by 3 ins. by $\frac{1}{2}$ in.; backboard, 2 ft. 6 ins. by 2 ft. 2 ins. by $\frac{1}{2}$ in.; mantel board, 4 ft. by $8\frac{1}{2}$ by $\frac{1}{2}$ in.; mould, 6 ft. by $1\frac{1}{2}$ ins. by 1 in.; base brackets, 6 ins. by $1\frac{1}{2}$ ins. by $\frac{1}{2}$ in. Mortise and tenon throughout. Mirror should be fixed by wedges. You can build the cornice out to project, say 3 ins., to form a shelf.

Display Cabinet Details.

[407] L. B. (Newcastle) is making a display cabinet from the sketch given in reply to a query in our issue of April, 1912 (Vol. XVI., page 98, Fig. 2). As cabriole legs are beyond him he wishes square tapered legs. He also asks for an alternative design for back, and for particulars of end view of cupboard.



Fig 1.

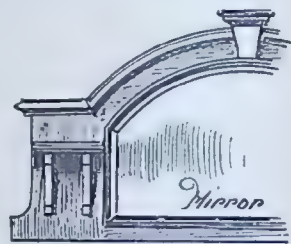


Fig 2

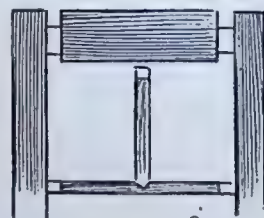


Fig 3.

DETAILS OF DISPLAY CABINET (No. 407).

(See also April issue, 1912, page 98, Fig. 2).

REPLY.—Yes, the tapered legs would look quite well, and in Fig. 1 we indicate how they may be carried out. The cupboards can be made as shown, the ends either plain or made to match the door panel. The end under panel can also be arched to match the front. The cabinet back might be altered to appear like Fig. 2, and the centre broken with a panelled key and moulded capping. Fig. 3 shows how the end panel may be put together to drop into the carcass framing, the stiles being $1\frac{1}{2}$ in. by $\frac{1}{2}$ in., and the rails 2 ins. by $\frac{1}{2}$ in. The flat slips are $\frac{1}{2}$ in. by $\frac{1}{2}$ in., V-cut together, and stub-tenoned to framing.

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A special treatment of native woods for use in the better grades of furniture has been tried with success in Germany. Freshly cut birch, oak, elm, pine or spruce is buried in earth mixed with lime and other materials, and left for from three to five months. A remarkably fine colour is imparted to the wood so that it can be used without painting or staining, and it has practically no tendency to shrink or swell.

HERALDRY

FOR ART CRAFTSMEN AND DESIGNERS.

THE relationship between heraldry and craft work is obvious; yet perhaps in no branch of his art is the average designer or craftsman weaker than in his knowledge of armorial bearings. There are few artists who have not, at one time or other, had to draw some heraldic symbol; few art craftsmen who have not on occasion been called upon to carve or model a shield or armorial bearing. Probably in most cases the task has been one in which imagination has played a more prominent part than definite knowledge, and even when research has been attempted the student may have been uncertain as to what he really wanted. Certainly, on paintings, on sculptured work and on designs of all description the expert on heraldry will usually be able to point out some blunder; and in a recent great work like the memorial to Queen Victoria, in front of Buckingham Palace, the shields representing Scotland and other heraldic features on the pedestal are technically at fault. The error, perhaps, is due neither to artist nor sculptor, but rather to the general disregard of the principles and usages of true armoury to be found in the printed records to which the designer will naturally turn for information.

In a volume entitled "Heraldry for Craftsmen and Designers"* by W. H. St. John Hope, and issued as one of the Artistic Craft Series of Technical Handbooks (published by Mr. John Hogg), we have something of the spirit of Ruskin and William Morris. This series, edited by Professor Lethaby, rightly holds a high position among technical

handbooks. In the present volume, so rich in illustration, it is the craft aspect of heraldry that is dealt with. Craftsmen have at times to deal with matters common to all the arts, and a knowledge of heraldry, as of lettering, is essential to the successful handworker. Heraldry, however, cannot be left to the

designer's imagination; it is a science which must be learned, and so far as the practical designer or craftsman is concerned Mr. St. John Hope's volume promises to be the standard guide. Like other books in the series—such as "Woodcarving," by George Jack, and "Silverwork and Jewellery," by H. Wilson—it will prove not only a trustworthy text-book for workshop practice, but one in which design itself is treated as an essential part of good workmanship. The obvious features of heraldry are fully dealt with: the shield, crests, mantlings, badges and knots, supporters, banners, crowns, coronets, collars, embroideries, etc. The illustrations shown form almost a complete reference to the subject, and at the end there is a series of over fifty full-page plates illustrating, in chronological order, typical examples showing the development and various applications of heraldic art from the 13th to the 18th century. The coloured and the collotype plates are also of practical help to the worker. The contents

are detailed for reference, there is a 15 page index, and a special index to the plates and text illustrations.

THE present volume of THE WOODWORKER AND ART CRAFTSMAN commenced January, 1913. All back numbers are available, price 4d. each post free. Annual subscription in Postal Union, 4s. post free. EVANS BROTHERS, LTD., Sardinia House, Kingsway, London, W.C.



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HOW TO DO IT.

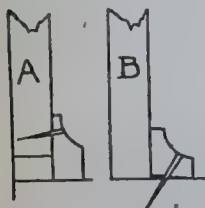
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To Stop a Gap Between Floor and Skirting.

In the majority of houses there is a more or less wide gap between the floor and skirting, not always caused through bad workmanship, but owing to the natural shrinkage of the joists and the timber they rest on. To fill this up is not a success, it being very difficult to finish it off neatly, and more so to fix it in position with a certainty of its staying there. The better way is to fix a small moulding round the room, as shown at A.



This will bend to the inequalities of the floor, and thus needs no fitting. This means that it can be fitted quickly, and being very cheap the fault is easily put right.

In a new house the fault may be provided for by fixing a small moulding round the room as B. This should be nailed to the floor only, as shown; and, if

the bottom edge is planed away so as to form an obtuse angle with the back, the latter will fit tightly to the skirting, though not actually fixed to it. Any sinking of the floor will not be seen as the moulding will still fit closely to it.

Fixing Shaky Door Handles.

Door handles are often the opposite from firm, owing to the hole through which the spindle passes being too large. This may be from excessive wear, or through having been made too large in the first place, the consequence being that there is nothing to fix the handle washer to, and in section the spindle and the opening will be as Fig. 1. To put this right, the hole should be roughly plugged up, so that a clean hole can be bored through the door. This second hole can then be filled with a permanent plug (as Fig. 2), glued in; it will form good fixing for the washer and will keep the spindle steady at the same time.



FIG. 1.

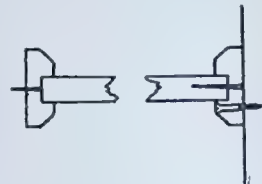
FIG. 2.

Loose Chisel Handles.

Fill the holes up with very hot glue and plunge in the tool; when the glue is dry the tool will be fixed firmly.

A Neat Way of Fixing Shelves.

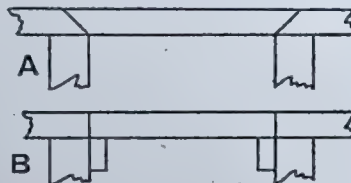
When a shelf has to be fixed in a recess, if the ordinary bearers are grooved to suit the thickness of the shelf, and fixed to the wall, the shelf will slide into the grooves as on the left in the drawing, and no other fixing will be needed. If one end of the shelf is free and bearers are available only at one end, the fixing may be as shown on the right, the free end of course resting on brackets.



FIXING SHELVES.

To Repair Floors.

When inserting a patch in a broken floor, it is best not to attempt to cut the opening out square in section, but to cut it on the slope, as at A, especially if the wood is rotten or decayed, as it often is. By doing



this a cleaner cut is obtained and the patch will fit better. Another good method is to bore down through by the side of the joist, so that the point of a saw can be inserted, and

saw across the board, nailing on strips to the joists to form bearers for the new patch, as at B. The first mentioned plan will be found the most satisfactory, both in practice and results.

To Stop Draught Under Doors.

By fixing a small threshold as shown in the doorway, and bevelling the bottom edge of the door to suit, it may be made practically draught proof. The edges of the threshold, moreover, form stops for the linoleum or carpet. Hard wood should be used, and it should be screwed to the floor. The illustration shows door and threshold in section.



Make Your Own Working Drawings.

It always pays to make a preliminary working drawing of any job in hand. The process of setting out reviews every piece required, and frequently discovers little points, the neglect of which usually spells disappointment to the untrained worker. Never start a job till the whole thing can be pictured piece by piece in the mind's eye, and there is a better chance of success with a working set-out before one. A sixpenny roll of lining paper (about 12 yards, 22 ins. wide) will answer most purposes of the kind in an

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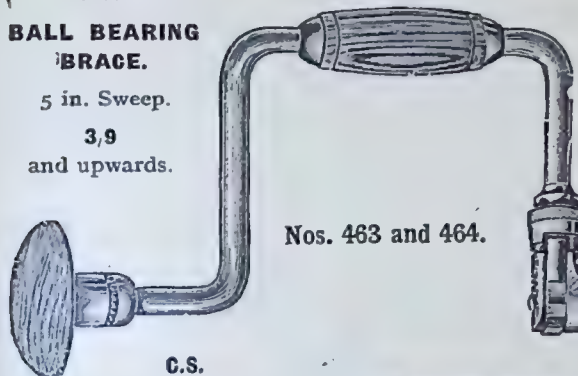
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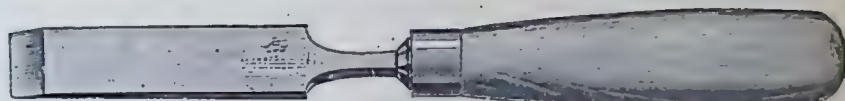


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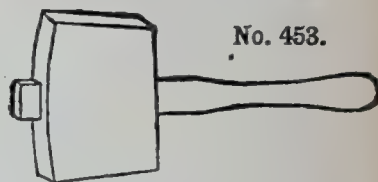


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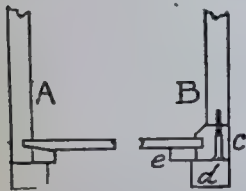
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HOW TO DO IT (Continued).

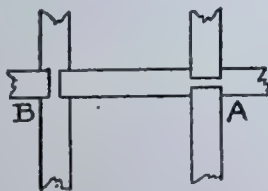
economical way. Cut off the length required and allow an extra 9 ins. or so for turning over and pasting down top and bottom. Half-a-dozen drawing pins will keep the paper sufficiently flat, and the pencilled result should save over and over again the amount of time spent in getting it out.

To Repair Drawers and Runners.

A common occurrence in connection with drawers is to find them working very badly owing to the running parts being worn away and ragged. It is comparatively easy to put in new runners; but to repair the drawer is more difficult, there being little scope for fixing new parts in a drawer of ordinary construction, as shown at A. The best way to proceed is to cut away the side of the drawer as at B, and screw on a stouter piece (c), this piece being grooved to carry the drawer bottom as shown. In conjunction with the new runner (d) and the glued-on fillet (e) to hold the bottom in place, this will make the drawer stronger than it was at first.



REPAIRING DRAWER.



FITTING SHELVES.

Useful Hint in Forming Nests of Shelves.

When forming nests of shelves it is necessary to trench either the shelves or the uprights. Sometimes one is done and sometimes the other. A glance at the diagram will show which is the correct way; on the right (A) the shelf is trenched, the upright divisions being cut into lengths to fit; the consequence is that only one-third of the thickness of the shelf is available for strength; whereas if the reverse method (B) is adopted, where the upright is trenched and the shelves are cut into lengths, the whole strength of the shelf is available, nothing being sacrificed.

Kitchen Table Suggestions.

It is a good idea, when making or buying a kitchen table, to see that the top is accurately squared, so that a serviceable drawing board is always at hand to set out the working detail of any job being done at the bench. Where a kitchen table of large size is necessary, portability is greatly assisted if the legs are separately turned to screw into the blocks above. The legs should be of hard wood (birch answers very well) about 4 ins. by 4 ins., and may be fitted with a metal screw or have a stout wooden one. Both screw and block will of course require tapping with the necessary thread, and should these in course of time work a trifle loose, they can immediately be made

firm by taking out and twisting a length of linen rag round the thread before finally screwing into position.

To Insert a New Key-hole in a Door.

Through badly fitting in the first instance, or through having to fix a new lock, a keyhole will often be found too large, and yet not so much so as to allow of cutting another entirely away from the original;

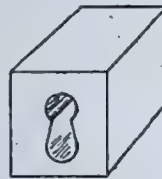


FIG. 1.

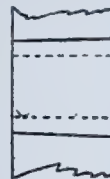


FIG. 2.

in such a case as this the best plan to adopt is to cut out a portion of the door, and insert a block of wood in which a new keyhole may be cut in the position required. The block should be slightly tapered as Fig. 1, and the key-hole may be made either before insertion or after. Fig. 2 shows a section of the block in the door; the dotted lines representing the key-hole.

Tempering Repousse Punches.

Many repousse workers make their own punches. To harden these, heat to a cherry red about an inch up the stock, then dip in cold water. Do not plunge in suddenly, but slowly, so as to gradually immerse the heated part.

To temper the punch polish half-way up one side of the stock with fine emery paper. Hold in a Bunsen or ordinary gas flame about half-way up the stock. The colour will change to light straw, then to blue and finally to purple. Move the flame slowly towards the face of punch and when the very edge of the flame gets to within $\frac{1}{4}$ in. of the face remove the punch and watch the colour till the tip is a medium straw. Dip the point (about $\frac{1}{4}$ in.) in water; this prevents further softening. Afterwards polish on leather with a little fine sand or with rouge and oil.

A Wheelwright's Mortise and Tenon Joint.

Various forms of mortise and tenon joints are called by the above title, but the correct form is that shown in the diagrams, where Fig. 1 is the section through the tenon and Fig. 2 the longitudinal section. The



FIG. 1.



FIG. 2.

only real difference between this and the ordinary tenon is that where, in the latter, the ends of the mortise are too often very much undercut, in the former (if made correctly) the reverse is the case and the ends are what in technical language is termed "made standing." Under these circumstances it will be readily understood that when the tenon has been forced in tightly it will require considerable force to move it.

PRACTICAL ARTICLES.

Below we give a list of sets of parts of the "Woodworker" containing articles of special interest. These sets can only be supplied at the prices quoted for a limited period.

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Open till August 7.—North British Academy of Arts Exhibition, held at the Victoria Institute, Worcester. Secretary, Mr. W. J. Morgan, Claremont Buildings, Newcastle-on-Tyne.

Open till August 16.—Grasmere Exhibition of Industries and Applied Arts, held in the Hall, Grasmere. Secretaries, Misses Eleanor and Gertrude Simpson, The Wray, Grasmere, Westmorland.

Aug. 6 and 7.—Suffolk Art and Aid Association's Exhibition, to be held in the Town Hall, Eye. Secretary, Mrs. Edgar Barnes, Hill House, Eye, Suffolk.

Aug. 27 to Sept. 13.—Moray Arts and Crafts Society's Exhibition, to be held in the Public Library Buildings, Elgin. Secretary, Mr. J. B. Gill, Grant Lodge, Elgin.

Sept. 27 to Oct. 3.—Ecclesiastical and Educational Art Exhibition, to be held in "The Marlards," Southampton. Secretary, Mr. J. J. Adam, Maltravers House, Arundel Street, Strand, London, W.C.

Oct. 13 to 18.—Sunderland Arts and Crafts Association Exhibition, to be held at the Victoria Hall, Sunderland. Secretary, Mrs. Gordon Bell, St. Bede's, Sunderland.

Oct. 16 to 30.—Luton, Dunstable and South Beds Fine Art and Crafts Society's Exhibition, to be held at The Galleries, Plait Hall, Luton. Secretaries, Messrs. H. and W. Blundell, Cheapside, Luton.

Oct. 25 to 30.—Beckenham Arts and Crafts Society's Exhibition, to be held at the Public Hall, Beckenham. Secretary, Mr. Frank Fletcher, 25, Albemarle Road, Beckenham, Kent.

Nov. 5 to 15.—"The Englishwoman" Exhibition of Arts and Handicrafts, to be held in the Maddox Street Galleries, 23A, Maddox Street, Regent Street, London, W. Secretary, "The Englishwoman," 11, Haymarket, London, S.W.

Nov. 11 and 12.—Croydon Hobbies Exhibition, to be held in the Public Halls, George Street, and Wellesley Road, Croydon. Secretary, Miss Cooper, 10, Dingwall Road, Croydon, Surrey.

Nov. 14.—Teignmouth Amateur Guild of Handicraft Exhibition, to be held at St. Michael's Church House, Teignmouth. Secretary, Miss Pier-son, Furzeleigh, Teignmouth.

Nov. 24 to 26.—Exhibition of the Gentlemen's Guild of Handicrafts, to be held at The Compton Hotel, Liverpool. Secretary, Miss Thomson, 3, Edward Street, Bath.

Dec. 2 to 5.—Worthing Arts and Crafts Exhibition, to be held in The Bedford Hall, Worthing. Secretary, Mr. C. B. Wickham, St. Cross, Valencia Road, W. Worthing.

In applying to Secretaries for schedules and particulars, a penny stamp should be enclosed for postage.

HOW TO DO IT (Continued).

Hints on Splicing.

To splice timber means to join two or more pieces together lengthways, and the correct way to do this depends upon circumstances. For instance; the splicing shown in Fig. 1 is suitable for any class of work, providing that pressure can be exerted both end-ways and side-ways; otherwise the sloping joints will not come up close.

Fig. 2 is suitable for any kind of work, the above objection not applying; but it is not so strong as the former unless specially strengthened. Fig. 3 makes a fine close joint, suitable for glueing, but is apt to be weak unless reinforced with screws or bolts.

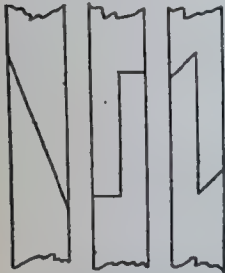


FIG. 1. FIG. 2. FIG. 3.
HINTS ON SPLICING.

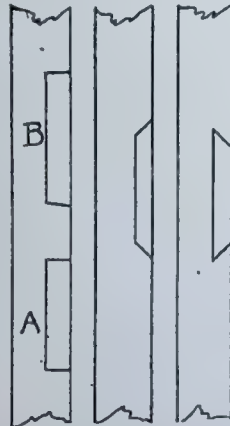


FIG. 1. FIG. 2. FIG. 3.
HINTS ON INSERTING.

Hints on Insertions.

To make good blemishes in woodwork is what we all have to do at times, and how to do it we have to find out by experience. To insert a new piece of wood in the place of a faulty piece is often done as above in Fig. 3; this, however, is not the best way, as it is difficult to make the piece fit at all parts. The better way is to insert the new piece as Fig. 2; there is then no difficulty in getting a perfect fit, and the greater pressure we bring to bear on it the closer will come the joint. Another very faulty method of repairing is that shown at A, Fig. 1, where the end joints are cut it at right angles; far better to cut them in as at B, as then they will wedge themselves tight.

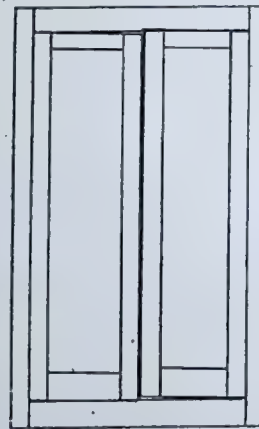
All the above are intended to be fixed with glue only, and surplus wood must be left at the outside in all directions, to be cleaned off after the glue is dry.

Adjusting Furniture (Doors, Drawers, &c.).

Everyone, on removing into a new house, finds that doors and drawers which worked quite easily before, refuse to do so in the new positions, and the remedy adopted is as a rule to plane away those parts which appear too large, only to find after that there are certain other parts which are decidedly too small. This proves that the remedy is not the correct one. The faults are caused through the floors in the new

house not being just on the same level as the old one, and the remedy is obvious—the furniture must be blocked up and so adjusted that the conditions are the same as before.

The drawing shows a wardrobe which looks decidedly lop-sided, and it is impossible for the doors to close properly; but if the left hand side is wedged up, the frame will give and go back to its right shape and the doors will again open and close without friction. The case shown is exaggerated, but it will serve to indicate the principle involved.



ADJUSTING A FAULTY
WARDROBE DOOR.

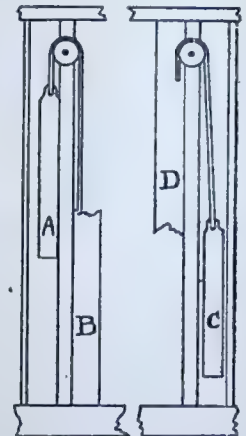


FIG. 1. FIG. 2.
WINDOW CORDS.

Adjusting Window Cords.

All handy men are equal to the insertion of new sash cords in these days. Not all, however, know how to adjust them to the proper length, so that the one sash will keep up to the top of the frame and the other one rest at the bottom, both opening full.

Fig. 1 shows the frame of a sash roughly in section. The bottom sash must rest on the sill when down; therefore the cord must not be too short, or the weight A would touch the pulley before the sash B would touch the sill. At the same time if the cord is too long the window will not stay open to its full extent, owing to the weight reaching the bottom of the box before the sash is fully open.

In Fig. 2 we have the top sash and frame in section, and here we have to guard against the cord being too long. If this should be so, the weight C will be resting on the bottom of the box, while the sash D is still some distance down from the top of the frame. Again it will not do to have the line too long, or the weight will be up to the pulley before the sash is fully open.

The points to look to then in putting in new cords are: (1) keep them as short as possible, while taking care that they are not too short; (2) remember that the cord on the bottom sash is better too long than too short—that on the top sash is *vice-versa*.

NOTE.—The Editor will be pleased to receive from readers interesting paragraphs for the "How To Do It" columns. See note at top of page 226.

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HANDWORK.

THE QUESTION OF EARLY TRAINING.

A Plea for Useful Artisan Education.

"PRIMARY ARTISAN EDUCATION." By W. P. Whelpton, B.Sc. Crown 8vo., 252 pp. 3s. 6d. net. (Longmans, Green & Co., 39, Paternoster Row, London, E.C.).

The author's aim in this carefully considered and carefully written volume is clear from the outset. During a long association with primary schools he has observed the futility of much that is taught, the almost entire neglect of those schools to look to a boy's future, and—as a probable result—the longing with which the average primary schoolboy looks forward to leaving school and entering work. The book is an attempt to outline a reorganisation which would bring the primary education of working class boys into closer touch with their future industrial work.

Whether teachers as a whole will agree that the neglect of the boy's future interests is as obvious as Mr. Whelpton urges, it is unnecessary here to consider. Any system of education, no matter how nearly approaching perfection, will always have its critics. On the particular aspect pressed by Mr. Whelpton, there can be little question that our existing system is at least inadequate, and on this ground alone his volume is worthy of serious thought. Our sympathy is certainly with him when he asks of what use is schooling to a boy if he is flung on the streets without the power of doing one single useful thing. And it is towards making the boy a useful creature when he leaves school that the author aims. What he wishes to see is that, at school, the boy is inspired with the spirit of true work. The school workshop should be equipped with wood and metal work of various kinds. In the open field and country there should be carried on such work as bridge-making, fence-making, digging, draining, gardening, field telegraphy, signalling, surveying, etc. In connection with these manual occupations practical instruction should be given in the arithmetic, geometric and drawing arts that are necessary for exact workmanship. To purely artificial manual work Mr. Whelpton is opposed. The boy understands the utility of something real—a piece of genuine carpentry or plumbing. To him it is no fiction; he knows that men do such things for a living. His heart—after the first novelty is over—is not in the whittling of wood with a Sloyd knife or in sand-papering a cylinder. Problems involved in useful work are more varied and complex than those of artificial exercises. In real work unexpected difficulties present themselves. The problem, moreover, is not always clear, and a pupil who has merely learned the graded exercises is unprepared when faced with something which calls for thought and judgment.

This is but one part of the ground covered by Mr. Whelpton's suggestive book. The culture, physical and health aspects are exhaustively dealt with. Whether his scheme of reorganisation could be successfully adopted without interfering with those features of education which hitherto have been regarded as essential is too wide a question to discuss here; but the book, apart from its main plea, is full of useful practical suggestions, and deserves the serious consideration which we have little doubt it will receive from those who read it.

Handwork for Young Children.

"HANDWORK AND ITS PLACE IN EARLY EDUCATION." By Laura L. Plaisted. Crown 8vo., 327 pp. 4s. net. (Oxford University Press, Amen Corner, London, E.C.).

This volume deals with handwork for young children, and is written chiefly for the use of practical teachers who work in comparative isolation, and who may thus have few opportunities of meeting and exchanging ideas with other teachers. Paper work, cardboard modelling, light woodwork, drawing, basket work, needlework, weaving, clay modelling and other forms of handwork are fully dealt with, and there are chapters on the reproduction of primitive industries (Dr. Dewey's system) and on handwork connected with history and geography. Special emphasis is laid on Froebel's "Gifts" and "Occupations" as a suggestive basis for young children's handwork.

The chief value of the book lies in the many ideas for models and in the descriptions of these. The illustrations, however (and there are two hundred), are disappointing. The great majority of these are photographic reproductions, and the fault lies not in the printing, which is excellent, but in the originals. In some cases the reduction is too great; in others the photograph is not suitable for reproduction at all. Of this defect the authoress is probably aware. In the absence of clear and well-grouped photographs line sketches would far more clearly have indicated the model represented, and the practical value of the book to teachers and students would have been greatly increased. A few diagrams showing the construction of some of the less elementary models would also have been helpful. Each chapter is supplemented by a useful (though necessarily incomplete) list of books of reference, and there is a full index. In harmony with all works issued by the Oxford University Press the volume is well printed and handsomely bound.

NOTICES.

Contributions.—The Editor invites correspondence and original contributions on all subjects relating to woodwork and other handicrafts. All MSS. should be accompanied by a stamped and addressed envelope for return if unsuitable.

Books for Review, price lists, tools, materials, etc., sent for inspection, enquiries and all correspondence relating to the literary portion of the Magazine should be addressed to the Editor.

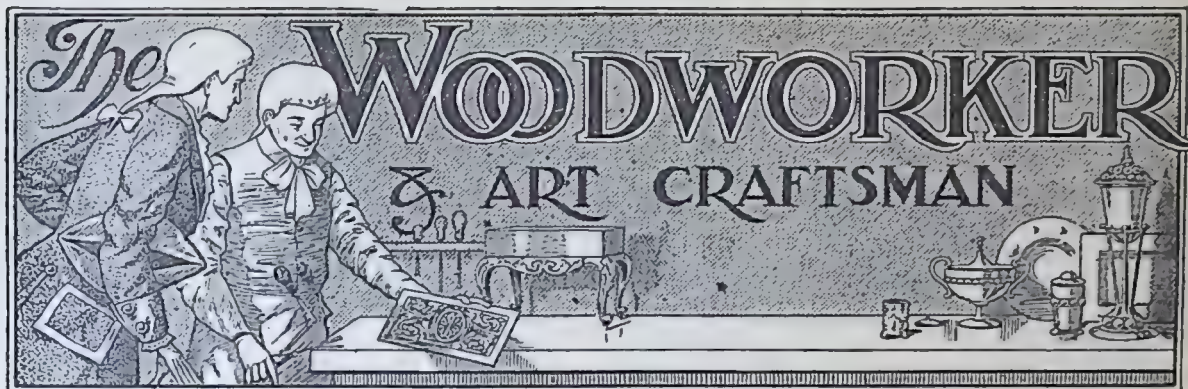
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DESIGN FOR THE MONTH.

SMOKER'S CUPBOARD.

THERE is probably little doubt that the great majority of woodworkers, especially amateurs, engage chiefly in what may be termed plain cabinet work. With this many may combine carving, inlaying, or turning; others may lean more to the bolder carpentry side. What the average man—be he professional or amateur—can always do, and what he invariably likes, is a piece of quiet, plain cabinet work: something that can be made to fill a corner in the home, or that will readily find a purchaser if offered for sale.

The subject of our August Design Supplement was such an example of plain furniture—a small cabinet-bookcase. The article was designed without mouldings, and had neither carved nor inlaid ornamentation. Essentially useful, for its artistic grace it relied solely on its general proportion and on one or two shaped parts. This month the Supplement is again devoted to a piece of light cabinet work, full sized details of the Hanging Cupboard illustrated here being given. Although not designed as a companion ornament to last month's cabinet-bookcase, the cupboard might well be made for the same room. Like the other it is plain in so far as it has neither moulded parts nor carving; no part of the construction is difficult, and it is just one of those articles that should appeal to any reader who has a fair knowledge of the use of tools. The amateur may undertake it without hesitation, and the regular cabinet-maker will find that such a cupboard, well finished, is the class of article that quickly sells.

The Design.

While called a "Smoker's Cupboard," the article is suitable for any purposes for which a hanging cabinet is required. It has no features, apart from its general accommodation, which would limit its use to the storing of tobacco, cigars and pipes. In the bedroom it will make a serviceable medicine cupboard, and in the drawing-room

(with a clear bevelled glass door instead of the picture shown) it may be used for china and other

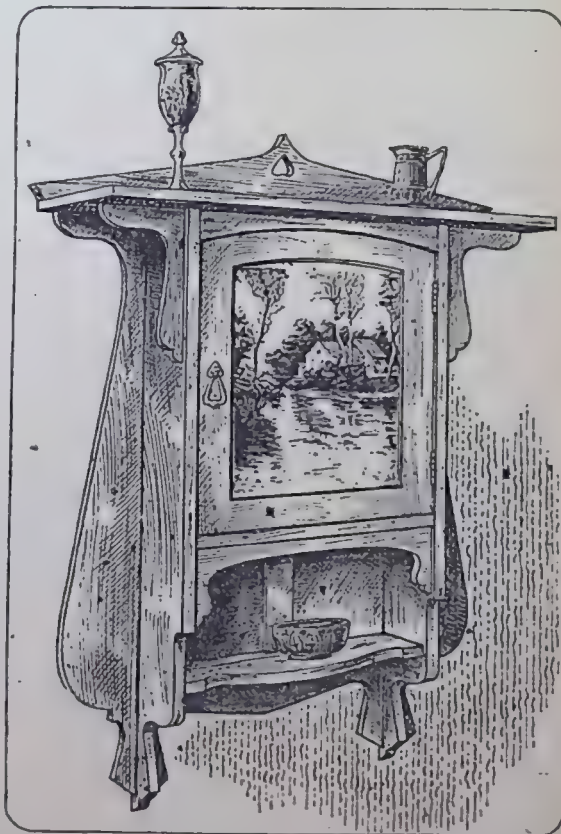


FIG. 1.—SMOKER'S CUPBOARD, 2 FT. 9 INS. BY 2 FT.

ornaments. The over all height is 2 ft. 9 ins., and total width (over pediment) 2 ft. The top

SMOKER'S CUPBOARD (Contd.).

shelf is 1 ft. 11 ins. by 9 ins. Carcase width is 13½ ins., and depth 7½ ins. The cupboard has an interior space of 15 ins. by 12 ins., with a depth of 6½ ins.; an inside shelf is provided. The arched recess below, with a shaped shelf, has a height of 6 ins.

The top rail of the door is curved, and the door itself is intended for holding a picture, say a sepia drawing or an autotype or photograph. This helps to brighten the cupboard and gives it a more worthy prominence. Several of the parts are shaped, but none of these will give any trouble.

Wood and Fittings.

WOOD.—There can be little doubt that oak is the wood to use for this cupboard. If other furniture has to be matched, walnut, mahogany, or satin walnut may be used. Those who wish a cheaper cupboard may take basswood or American whitewood and stain it to the colour of any of the ordinary furniture woods. The total cost of oak for making the cupboard should be about twelve shillings, but of course prices vary in different parts of the country.

In the following cutting list the lengths quoted allow for joints, but are otherwise net. Widths and thicknesses are also net. In ordering wood allowance must therefore be made for cutting and paring.

		Long.	Wide.	Thick.
		ft.	ins.	ins.
A	2 Sides	2	5	7½
B	Top	1	11	9
C	Rail above door ..	1	0½	1½ 1" or less
D	Cupboard bottom ..	1	0½	7½
E	Lower shelf	1	0½	7½
F	Back; 2 pieces each ..	1	10½	6½
F1	Fillet for back ..	1	10	2
G	2 Side wings	2	3½	4½
H	2 Side brackets ..	0	7	4½
I	Arch below cupboard bottom	1	0	3½
J	Apron piece	1	0½	5½
K	Pediment	2	0	3½
L	2 Door stiles	1	2	1½
M	Shaped upper door rail ..	1	0	2½
N	Lower door rail	1	0	1½
O	Inside cupboard shelf ..	1	0	6½
P	2 Fillets for ditto ..	0	6	½
Q	Beading for door	4	0	½
R	Bevelled back panel for door	0	11½	9½

FITTINGS.—Brass door catch. Pair 2 ins. brass butt hinges. Lock if required. Picture (preferably an autotype or a carbon photograph), size about 11½ ins. by 9½ ins. Glass for framing, size about 11½ ins. by 9½ ins. Four brass plates for hanging. The Editor will be pleased at any time to advise readers as to the cost of materials

and fittings for any article described in THE WOODWORKER AND ART CRAFTSMAN, and to give addresses of firms from whom these may be obtained.

The Parts.

A brief description of the various parts will make the construction clear. The reference letters will be found in Figs. 2, 3 and 4.

SIDES (A).—Allowing for the housing joint at the top, these are 2 ft. 5 ins. long by 7½ ins. wide and ¾ in. thick net. They show 2 ft. 4¼ ins. in length. The top edge is intended to be housed (preferably dovetail-housed) to under side of top shelf (B). At the lower end the pieces are shaped as indicated. Each side must be mortised on inner face for tenon of rail above door (C), dovetail grooved for cupboard bottom (D), and grooved for lower shelf (E), the grooves in each case being stopped back ¾ in. from front edge. The groove for lower shelf (E) need not be dovetailed. The back edges are rebated to take the back (F) and the apron piece (J).

TOP SHELF (B).—1 ft. 11 ins. by 9 ins., is also ¾ in. thick. At the front it overhangs the carcase 1½ ins., and at each end 4¼ ins. It is dovetail-grooved to take the sides, the grooves being stopped well back from front edge, and is holed to take the dowels of wing pieces (G), brackets (H) and pediment (K). The under back edge is rebated to take the back (F).

THE RAIL ABOVE DOOR (C) is shaped to correspond with top door rail. In length it shows 12 ins. (the width between the sides), but it should be cut 12½ ins. or 12¾ ins. to allow for tenons at each end to enter the sides. The width of rail is 1½ in. at the ends and ¾ in. at centre, the curve being described with a 19½ in. radius. On the Supplement the rail is shown 1 in. thick, but thinner wood may be used if preferred. A good plan is to cut it and the top rail of door (M) from the same piece of wood, and thus ensure a correct curve for both. Rail C is flush with the edges of sides, and blocks may be glued behind to secure it to the top.

CUPBOARD BOTTOM (D) will be dovetail housed to the sides, and will need a board 12½ ins. long by ¾ in. thick. It will be cut back ¾ in. to correspond with the stopped grooves. The cupboard bottom finishes flush with the side edges, and if an over all back (¼ in. thick) is used it need only be 7½ ins. wide. If the back is broken here the shelf must be 7½ ins.—the full width of sides.

THE LOWER SHELF (E) is shaped, being 6½ ins. wide at the ends, and 7½ ins. at the centre. Its length, to allow for housing, will be 12½ ins., and it may finish ½ in. thick. The housing in this case need not be dovetailed, but the shelf will be cut back to correspond with the grooves. It is intended that the ends of the shelf stand back about ¼ in. from the shaped edges of sides. The back edge may be rebated for the back, or the shelf

may be cut $\frac{1}{4}$ in. less in width, and the back allowed to overlap. See Fig. 5 for plan of shelf.

BACK (F).—Assuming that the back will come right down over recess it may be made of two $\frac{1}{4}$ in. boards, $22\frac{1}{2}$ ins. by $6\frac{1}{4}$ ins. The joint may be covered by a fillet (F 1), about 2 ins. wide and $3\text{--}16$ in. thick. In the sketches and on the Supplement the back is shown as rebated to top and lower shelves as well as to the sides. If preferred, it may finish under the top shelf, to which it will be held with small and neatly fitted

the upper parts of the wings, are also $4\frac{1}{2}$ ins. wide and $\frac{5}{8}$ in. thick; in length they are 7 ins., but the two may be got out of a piece $8\frac{1}{2}$ ins. by $4\frac{1}{2}$ ins. They are doweled to top shelf, and like the wings may be screwed to the sides, the screws being hidden by the door. The brackets must be set back $\frac{1}{8}$ in. from front edge of sides.

THE ARCH (I) below cupboard is 12 ins. by $3\frac{1}{2}$ ins., and may finish $\frac{1}{2}$ in. thick. It is set back $\frac{1}{8}$ in. from edges of sides, and shelf, and may be held with small glued blocks neatly fitted in behind.

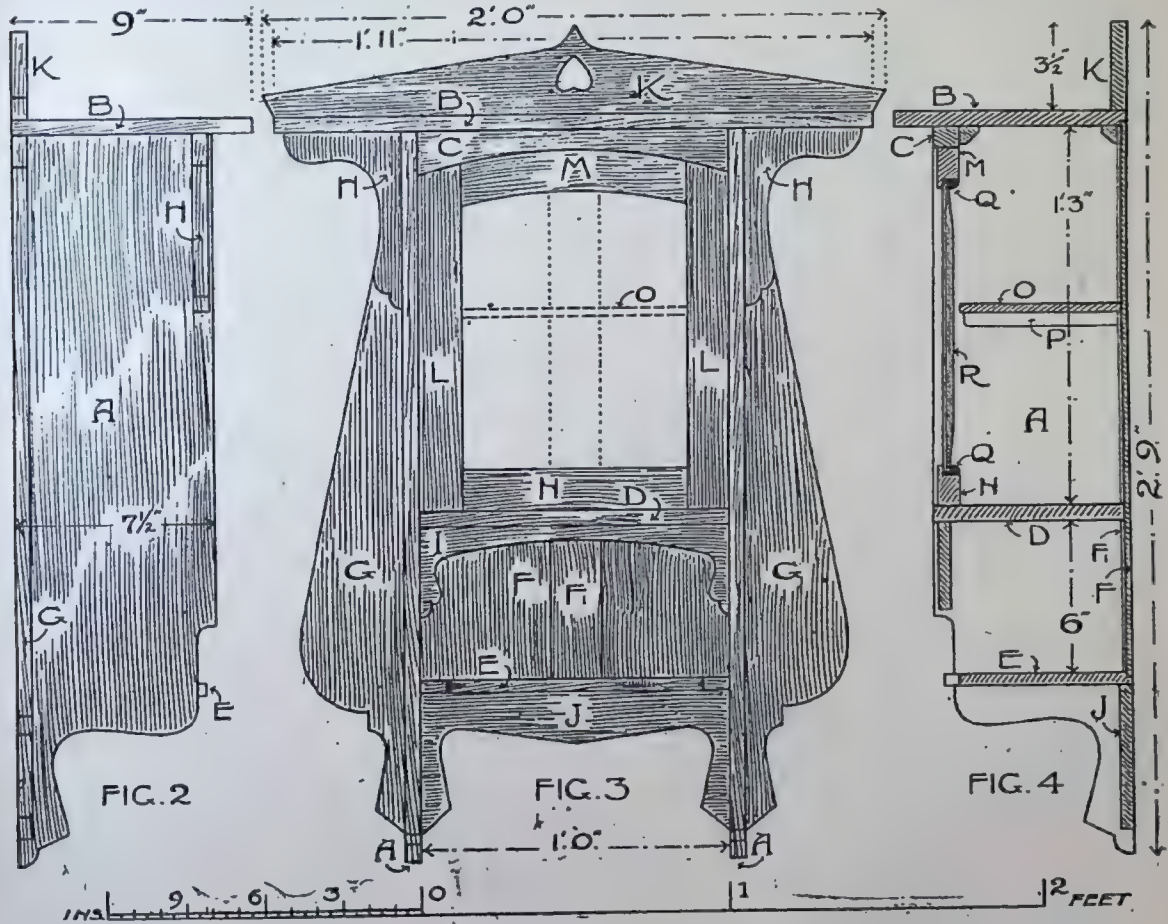


FIG. 2.—SIDE ELEVATION.

FIG. 3.—FRONT ELEVATION.

FIG. 4.—SECTION.

All measurements not marked may be taken from the accompanying scale.

glued blocks; below it may overlap the lower shelf, as just suggested, the shelf being cut in $\frac{1}{4}$ in. to allow for it.

THE SHAPED WINGS (G) are 2 ft. $3\frac{1}{2}$ ins. long by $4\frac{1}{2}$ ins. wide, and should be $\frac{5}{8}$ in. thick. Care should be taken to cut the outline accurately, and to finish all edges smooth and clean. The wings lie flush with the back, and may be glued and screwed to the sides. The top edge is doweled to the top shelf.

THE SIDE BRACKETS (H), of the same shape as

THE APRON PIECE (J) should be rebated to the sides, and will therefore need a piece $12\frac{1}{2}$ ins. long. In width it is $5\frac{1}{2}$ ins., and may finish $\frac{1}{2}$ in. or $\frac{5}{8}$ in. thick. Some workers may wish to rebate the apron to the lower shelf, but with neat fitting this ought not to be necessary.

FOR THE PEDIMENT (K) take a piece 2 feet by $3\frac{1}{2}$ ins. by $\frac{5}{8}$ in. thick. The shaping, although simple, is important; the inverted heart is fretted. The pediment is held with four or five dowels. Here it might be said that if the cupboard is to

SMOKER'S CUPBOARD (Contd.).

be hung high up, so that the top shelf is considerably above eye level, the pediment should be made an inch or so wider. As an alternative it might be fixed to the front of the shelf instead of at the back, being set back about $\frac{1}{4}$ in.

The Door.

The door is framed up of stiles and rails in the usual way, these (with the exception of the top rail) being $1\frac{3}{8}$ in. wide by $\frac{3}{8}$ in. thick. The stiles (L) may be prepared from 14 in. lengths, and the lower rail (N) from a 12 in. piece. The top shaped rail (M) requires a piece 12 ins. by $2\frac{1}{8}$ in., the curve (as before mentioned) being struck with a $19\frac{1}{2}$ ins. radius. If the top door rail (M) and the rail (C) are cut from one piece a width of $2\frac{7}{8}$ ins. will be required. Stiles and rails are rebated for the picture, but are left unrounded. The over all size of door is $14\frac{1}{2}$ ins. high at centre by 12 ins. wide. It is set in $\frac{3}{8}$ in. from edges of sides, and is hung on brass butts. A drop catch should be added, also a lock if desired.

PICTURE.—This is fitted as in ordinary picture framing, except that the back must be finished off neatly. For this purpose a bevelled backboard, $\frac{3}{8}$ in. thick, held by a bead will do. A flawless sheet of glass should be obtained.

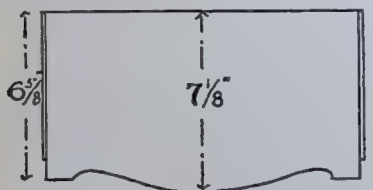


FIG. 5

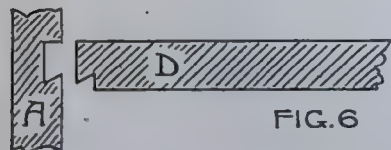


FIG. 6

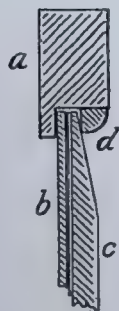


FIG. 7

FIG. 5.—PLAN OF SHAPED LOWER SHELF. FIG. 6.—DOVETAIL-GROOVED JOINT FOR CUPBOARD BOTTOM AND SIDES. FIG. 7.—SECTION OF DOOR (a, Door Rail; b, Glass, etc.; c, Bevelled Backboard; d, Fixing Bead).

INSIDE SHELF (O).—This will be 12 ins. by $6\frac{1}{2}$ ins. and $\frac{3}{8}$ in. thick. It may rest at each side on a narrow fillet (P). The shelf provides a door stop; but, if it is found more convenient to have a narrower shelf, a little piece of dowelling should be let into the cupboard bottom to act as a stop.

Hints on Construction and Finish.

If oak is the wood used it must be well cleaned before fitting. The construction has practically all been dealt with in the description of the parts. Of course different workers adopt different methods, and it is not necessary that the precise

method suggested be followed in every detail. It is important to have the top and the cupboard bottom securely fixed to the sides. Dovetail-housing will afford the desired strength, and if the top is glue-blocked to the top front rail (C) and to the back, and also dowelled to wings and brackets, it will be rigid.

FINISH.—A wax-polished finish is all that the cupboard needs unless surrounding furniture has to be matched. If fuming prior to waxing is practicable a rich effect is secured.

The WOODWORKER AND ART CRAFTSMAN designs are not given away with back numbers. Additional copies may be had, price sixpence each, from the Publishers, EVANS BROTHERS, LTD., Sardinia House, Kingsway, London, W.C.

LIGHT WOODWORK.

THERE is—and probably always will be—a constant demand for new ideas in regard to the teaching of light woodwork in schools and in the manual training room. As in all craft work, too, the demand is for suitable designs. Instructors now realise that woodwork exercises given to boys must not be artificial. They must represent something real; the article made must have some obvious use. It may be something that is actually used in the house; it may be toy; it may be an ornament. If so, the pupil understands it, and has taken a real interest in making it. In a piece of woodwork which has no meaning he cannot be expected to take much interest. The difficulty that many instructors experience is in finding designs which are suitable for more advanced boys—designs which not only provide the required woodworking exercises, and represent something useful when made, but which in general proportion and in detail are pleasing to the eye.

Two well known authorities on woodwork training, Mr. W. G. Alderton, of St. Albans, and Mr. J. T. Bailey, of Rochester, have conjointly issued, under the title of "Light Woodwork,"* a course of handwork, correlated with practical drawing, mathematics and composition. The book is written for handwork teachers, chiefly with the purpose of showing how—especially in rural districts where there is no manual training centre—more advanced woodwork instruction may be provided for older scholars. At the same time there is much in the volume that is suggestive to the home woodworker. The authors, too, present their scheme without a superfluous syllable. Their models are given in elevation, plan and isometric projection, with details of joints, and with only such letterpress notes as are essential for making the work clear. It is also shown how the practical work may be correlated, if desired, with drawing, arithmetic and composition. Care has been taken in the selection and design of models, the drawings are clear and the directions adequate. To readers whose vocation is teaching, the volume may be recommended as a useful and practical guide.

* "Light Woodwork," a course of handwork, by W. G. Alderton and J. T. Bailey. 8vo., 84ms. by 54ms., 128 pp., 136 illustrations. 2s. 6d. net. (Edward Arnold, 41-43, Maddox Street, Bond Street, London, W.).

NURSERY FURNITURE.

COT AND COT BEDSTEAD.

IN the present article instructions and sketches are offered for the construction of a child's cot, a piece of nursery furniture that may carry interest for many of our readers as being more generally serviceable to make than the cradle described in June issue. Like the latter, however, it is an item of furniture that will quickly be outgrown, and an additional suggestion is included for the making of a child's bedstead, this being fitted with an adjustment that will enable it to be used as a cot if desired.

WOOD.—Oak, walnut, mahogany, ash, birch, basswood and birch are all suitable woods, but of course the wood selected for the suite should be the same throughout, although the lighter woods can be stained to imitate the three hard woods first named.

The Cot.

DIMENSIONS for the cot are placed at 4 feet by 2 feet, with a height of 3 feet 6 ins. over all. The cot may be framed together on all four sides at the seat, but being intended to have one side pivoted to let down it is jointed on one side only to the posts above the seat rail. It will be more comfortable to the user if fitted with a woven wire spring mattress, but it can have a canvas bottom laced to the seating rails, or can be cross-webbed like a chair or settee if difficulty be experienced in obtaining a wire mattress to fit.

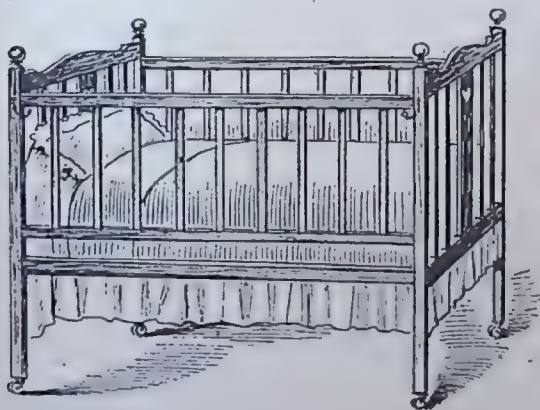


FIG. 1.—PERSPECTIVE VIEW OF COT.

UPRIGHTS.—Proceeding to make a start with the cot, the uprights or posts (A, Fig. 2) will require four lengths 3 feet 6 ins. by 1½ in. by 1½ in. They are shown in Fig. 1 as with the upper 2 ins. turned, but if the worker has not access to a lathe the posts can be fitted with moulded caps (Fig. 2, G) 2½ ins. by 2½ ins. by ¾ in., which should be dowelled and nailed into position to prevent them twisting out of the square. If not fitted with iron dovetails

the posts will also be mortised to receive tenons on side and end rails, the mortises being cut right into the posts till they meet, and the tenons a trifle short of this with the ends bevelled. The joints will be afterwards pinned. A set of castors should be fitted, and holes can be bored to receive the pivots on the dropping side at a point in the posts about 18 ins. up.

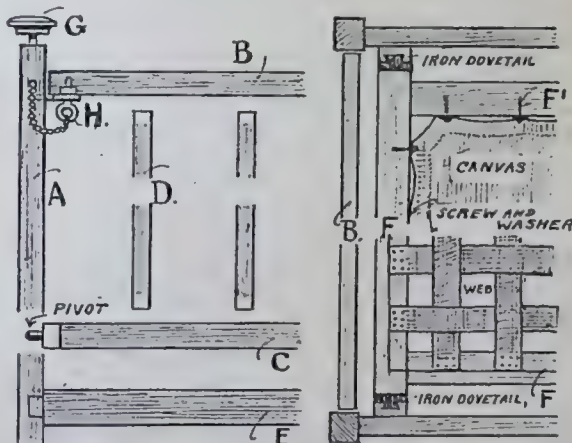


FIG. 2.—DETAILS OF FITTING.

TOP SIDE RAILS (B) can be got out from pieces 4 feet long, to finish 1½ in. wide by 1 in. net thick, each mortised to receive tenons on nine bars. The ends of these top rails should be ferruled or banded with sheet brass about 1 in. wide as provision against splitting. No tenons are required on one of the rails, as this when up is kept in position by a brass screw-eye and chain attachment (Fig. 2, H).

LOWER RAILS (C) can be cut to the same size, and at the same time as the upper. They will be mortised for bars in the same way, but one of the rails, instead of being tenoned to posts, should be brass-banded and fitted each end with a pin to enter the posts as shown, so that it will act as a pivot upon which the side turns whilst being lowered to give easy access to the bedding.

THE BARS (D) can be entered into the rails to their full thickness, top and bottom. Eighteen are required, 1 ft. 6 ins. by ¾ in. by ½ in., a trifle in length being allowed for trimming.

SEAT RAILS (E).—In the absence of iron dovetails the seat rails may be tenoned to posts and pinned, or may be dowelled and stiffened with iron or brass angle brackets, screwed to under side of rails and posts. The rails can finish 2½ ins. wide by ¾ in. or 1 in. net thick from pieces 4 ft. long if tenoned or dowelled, or may be 1½ in. by 1½ in. to agree with the posts if dovetailed.

NURSERY COT (Contd.).

MATTRESS RAILS.—As seen in Fig. 2 (right hand sketch) the mattress rail F is dovetailed to the lower rails of ends on the side where the rail B falls, but the dovetails can be fitted to the posts of the opposite fixed side. The rails F¹ are tenoned in each end, and are the same thickness and width as F.

CANVAS BOTTOM.—If this is to be fitted stout material should be selected and cut at least 4 ins. longer and wider than the opening, so that the edges can be turned over and stitched a full 2 ins. to stiffen them. Stout brass or copper washers and brass screws will then serve to fix the canvas to the inner edges of framing, care being taken when boring not to split the wood. A little Russian tallow may be used on the threads of the gimlet and screws.

CROSS WEBBING.—If it is found more convenient to cross web the seat frame a shallow rebate can be made for the ends of the webbing, the web being first tacked in, then turned back on itself, tacked again, strained across the frame, tacked into the opposite rebate, and cut off sufficient to be turned back on itself in the rebate and tacked again. In this way each length of webbing may be tacked at a distance of about 3 ins. It will probably be found more convenient to lay all side to side lengths first, and then those from end to end, interlaced in the usual way.

It may be added that if any difficulty is experienced in procuring the necessary dovetails a model in wood can easily be knocked up and handed to the local smith, who would make what is required for a small sum.



FIG. 3.—COT BEDSTEAD.

THE TOP END RAILS, shaped as at Fig. 1, can be got out of pieces 3 ins. wide by 2 feet long to finish preferably 1 in. net. They can be tenoned or doweled each end to enter posts, and will also be shallow-mortised to receive the bars and panels.

THE BARS will look well $\frac{7}{8}$ in. wide by $\frac{5}{8}$ in. thick, and should be 1 ft. 9 ins. long.

THE PANELS may be $2\frac{1}{2}$ ins. to 3 ins. wide, and are indicated with a small fretted heart.

LOWER END RAILS may finish $2\frac{1}{4}$ ins. wide by 1 in. net, and are doweled or tenoned to posts and mortised for panels and bars. A set of four brown bowl castors should be fitted, or "domes of silence" can be used instead.

Cot-Bedstead.

For the bedstead the length may be 5 feet to 5 feet 6 inches by 2 feet 6 ins., the head end being 3 feet 9 ins. high, and the foot end 2 feet 9 ins. over all.

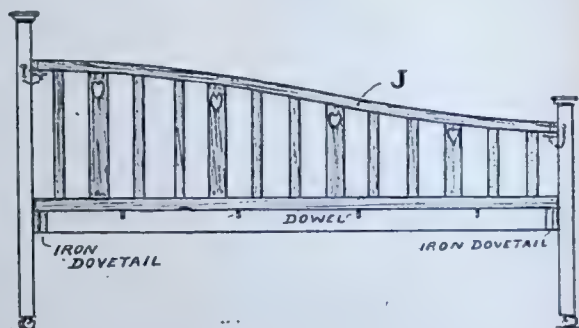


FIG. 4.—SIDES (IF REQUIRED) FOR BEDSTEAD.

HEAD END.—The posts of the cot-bedstead (Fig. 3) at head end can be cut 3 ft. 9 ins. long and can finish $1\frac{1}{2}$ ins. by $1\frac{1}{2}$ in. net. They should be mortised to receive one top rail (this may be dovetailed in) $1\frac{1}{2}$ in. by $1\frac{1}{2}$ in., and one lower rail $1\frac{1}{2}$ in. wide by $\frac{7}{8}$ in. thick (into which the panel and bars are tenoned), and also one bottom rail $3\frac{1}{2}$ ins. wide by $\frac{7}{8}$ in., all cut from pieces 2 feet 6 ins. long. The bars should be cut 2 feet long by $\frac{7}{8}$ in. by $\frac{5}{8}$ in. thick net, and the panel 3 ins. wide by $\frac{5}{8}$ in. can also be fret-cut as indicated. The moulded capping will take a length of 3 feet 9 ins. by $3\frac{1}{2}$ ins.; with a three-member section it can be $\frac{7}{8}$ in. or $\frac{3}{4}$ in. thick, all corners being rounded when finishing.

THE FOOT END can be fairly low, say, 2 feet 9 ins., other dimensions for posts, capping, upper rail, bars and bottom rail being as for the head end, except that the bars and panel are here 1 ft. 9 ins. long, and the bottom rail 4 ins. wide. Iron head, foot and side rails, with dovetail attachments, had best be obtained for these, although wooden sides ($1\frac{1}{2}$ in. by $1\frac{1}{2}$ in.) can be fitted with iron dovetails if desired. A set of brown bowl castors had also better be fitted.

THE SIDES (Fig. 4) are intended to be easily detachable, the top shaped rail being held by chain and screw eye attachment as before explained. If the wooden sides are fitted for the bed seating the lower rail of sides can be fitted with four dowels to drop into them; or, if iron angle sides are chosen, the lower rail can be attached with small clips, or even dresser hooks entered into the under side of rail will answer to grip the part in a simple way. The top rails should be full 1 in. thick, and

both can be cut from a 9 ins. board about 2 ins. wide, to be mortised for nine bars and four panels, and to finish with the upper end smoothly rounded. The lower rail may be the same width and thickness, and is indicated as with four dowels. The seating rail is correspondingly holed for them to drop into without glueing.

THE SPRING MATTRESS, if in a pitch pine frame, will rest upon the seat rails of the bedstead, or may be fixed to them by iron angle brackets. These rails may be of wood, with iron dovetails screwed to the ends to enter iron sockets which are screwed to both head and foot ends.

Alternative Ends.

By way of suggestion two alternative ends for cot or bedstead (on lines to agree with the alterna-

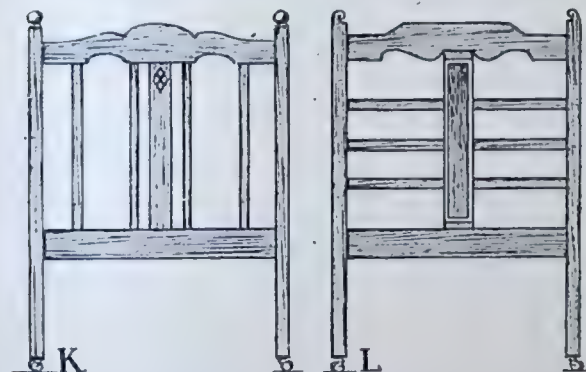


FIG. 5.—ALTERNATIVE SUGGESTIONS FOR ENDS.

tive suggestions for chair backs, given in the July issue) are shown at Fig. 5. The top rails, with the shapings shown, should finish about $4\frac{1}{2}$ ins. wide, with the upper edges rounded off as before. The bars near the posts for left hand sketch K should be 1 in. or $1\frac{1}{8}$ in. wide, the panels $2\frac{1}{4}$ ins. wide, and the bars on either side of it $\frac{7}{8}$ in. wide, all being $\frac{5}{8}$ in. thick. Lower rail finishes 4 ins. wide, and is fixed with the top edge 18 ins. from ground. The

panel may be inlaid or fret-cut as noted. For right hand sketch L, upper and lower rails are of similar dimensions, the centre panel being 4 ins. wide, and the three bars $1\frac{1}{8}$ in. wide, tenoned to posts each end, and halved and pinned to the panel. The latter may have a $\frac{1}{4}$ in. or $\frac{3}{8}$ in. chequered banding.

NOTE.—The other articles in this series are:—Toy Cupboard (May issue), Canopy Cradle (June), Combined Chair and Table (July), and Table (August). These numbers may be obtained through any Newsagent, price 3d. each, or direct from the Publishers (EVANS Bros., Ltd., Sardinia House, Kingsway, London, W.C.), price 4d. each, post free.

List of Parts.

	Cor	Long. ft. in.	Wide. in.	Thick. in.
A	4 uprights ..	3 6	x	x
B	2 top rails (sides) ..	4 0	x	x
C	2 bottom rails (sides) ..	4 0	x	x
D	18 bars (sides) ..	1 6	x	x
E	2 seat rails ..	4 0	x	x
	8 bars ..	1 9	x	x
	ENDS.			
	2 panels ..	1 9	x	x
	2 top rails ..	2 0	x	x
	2 bottom rails ..	2 0	x	x
F	2 mattress rails ..	4 0	x	x
F ¹	2 ditto ..	2 0	x	x
G	4 moulded caps if required ..	2 3	x	x
	Set of 4 castors. Set of small iron dovetails if required.			
	COT-BEDSTEAD, Head End.			
	2 posts ..	3 9	x	x
	1 moulded capping ..	2 9	x	x
	1 top rail ..	2 6	x	x
	1 lower rail ..	2 6	x	x
	1 bottom rail ..	2 6	x	x
	6 bars ..	2 0	x	x
	1 panel ..	2 0	x	x
	Foot End.			
	2 posts ..	3 9	x	x
	1 moulded capping ..	2 9	x	x
	1 top rail ..	2 6	x	x
	1 bottom rail ..	2 6	x	x
	6 bars ..	1 9	x	x
	1 panel ..	1 9	x	x
	Set of 4 castors, 1 set iron dovetails for wood seat rails, and iron seat rails and dovetails.			
	Detachable Sides.			
J	2 top rails ..	5 6	x	x
	2 lower rails ..	5 6	x	x
	18 bars ..	1 9 to 12 x	x	x
	8 panels ..	1 9 to 12 x	x	x

Widths and thicknesses are net, but lengths allow for joints and paring.

All About Staining and Polishing.

If the reader wishes to know *everything* about staining, polishing and all other methods of wood finishing, he cannot possibly do better than begin by investing the matter of a shilling in *THE WOODWORKER* handbook, "Staining and Polishing." This indispensable guide is written throughout for the practical woodworker, and on every page the practical hand of the writer is evident. Dealing first with staining, the various stains and the woods they are used upon are described. Methods of preparing the wood and applying the stain, also of fuming, are explained, and a special chapter is devoted to useful hints on the actual work. Wood stencilling and ornamental wood staining also come under this section. The exhaustive treatment that polishing receives may be gauged from the fact that no less than eight chapters are devoted to it, materials, processes, bodying-up, spiriting-out, glazing, dry-shining, dulling, matching-up, improving,

&c., being fully described. Defects such as sweating, cracks, blisters, dullness, finger-marks, fading, and many others are explained, and remedies for these given; spirit enamelling is dealt with, and the polishing of turned and inlaid work receives attention. There is a chapter on oil polishing and another on wax polishing. To varnishing five chapters are set aside, important matters like felting down and faults in varnishing being dealt with. At the end there is an appendix of eight pages giving recipes for wood stains, water coating, self-colours, polishes, oil, spirit and water varnishes. The handbook, which thus deals with every form of wood finishing, may be had for 1s. 2d. post free from EVANS BROS. LTD., Sardinia House, Kingsway, London, W.C.

Designs for Woodworking.

See our special announcement on page 257, regarding designs for woodcarving, cabinet work, etc.

WHEELS AND WHEEL MAKING.

BOXING (OR BUSHING) THE HUB.

WHEN the tyre has been fixed to the wheel, the next and final operation is to bore the hub through the centre and line the hole with the cast iron box, or bush; this is to lessen the friction and to withstand the wear and tear of the running of the wheel. In light wheels, such as are used on ordinary carts and carriages, the box is in one piece only, running from the back of the hub to the front; but in heavy wheels such as we are dealing with there is a front and a back piece, each being fixed in corresponding positions in the hub, with a blank space between.

The Boxes.

The boxes, whether in two parts or not, are cast so that the bore is tapered. Thus the back of the hub, with the box inserted, will appear as Fig. 1, and the front as Fig. 2, the solid part representing the box in each case. To make our meaning still more clear, we give in Fig. 3 a section of the centre of the wheel, with both front and back boxes in position, showing the tapered insides and the parallel outsides. We also show in Fig. 4 a sketch of the cast iron box for the back of the hub.

From Fig. 3 it will be noticed that there is a recess in the front of the hub larger than the box; this is to allow room for the linch pin (the iron pin which passes through the axle near the point and prevents the wheel from running off) to revolve with the axle, without the end of the latter projecting beyond the hub.

Boring the Hub.

In Fig. 10 is shown in section the method of boring the hub to take the boxes. The wheel is laid flat on the wheel stool, the screwed part of the boxing engine (A) being fixed to one end of the hub, keeping it as nearly central as possible. This part is shown fixed in Fig. 5, and as the three radiating arms are usually true they will form guides for the central threaded part.

The part for the other end of the hub is simply to form a guide to keep the boring bar in position, and is fixed by tapping the three pointed legs into the end of the hub, keeping the opening as central as possible, and adjusting it finally by an additional tap on one or more of the legs as required. The end of the hub with this part adjusted is shown in Fig. 6, and also in Fig. 10 at B.

The actual boring is done by cutters fixed in the boring bar with wedges, as at C in Fig. 10, the opening being started by boring through the hub from end to end with an ordinary auger. As the boring proceeds the cutters are further advanced and longer ones inserted until the hole is the required size to take the iron box.

After the hole on one end of the hub is made, the fittings must be reversed and the other end done in the same way. Fig. 10 shows the opening

made in the back of the hub, and the apparatus fixed ready for making the opening in the front end. Fig. 11 shows a section of the hub at this stage, while Fig. 12 shows the same when we have gone a stage further, the opening for the front box being finished. Fig. 13 shows the hub finished as far as the boring is concerned, the enlarged front opening being done.

When boring the hub there is no need to use the boring bar beyond the box seats; the remainder can be cut away more easily with a large gouge. It does not matter if the wood is left rough there.

It will be seen at Fig. 4 that the boxes are furnished with three projections. These are to prevent them from turning round in the hub, and at this stage the latter must be cut away to take them; the two boxes can then be placed in position. The openings should be of such a size that the castings will drive in without much force, but not so loose as to drop in, or—what is of more importance—drop out.

Preparing the Axle.

The boxes are fixed permanently with wedges, but as this necessitates testing for truth the axle on which the wheel will run must be prepared, providing it is not already in existence. In Fig. 7 is shown how the axle arm is set out so that, when the wheel is running, the lower spoke will be in an upright position.

To set out the "arm" so that it will fulfil the necessary conditions, the angle formed by the spokes with the centre line of the hub must be taken and transferred to the axle, as in Fig. 7. On this line must be set off the size of the boxes as shown by the circles. These being connected as shown, and the axle rounded to that size, it should be an approximate fit. The fit may be made complete by trying it in position and cutting away the wood where it shows friction until the arm can be turned round in the wheel freely, but not loosely. The arm of the axle horizontally must be shaped centrally, as in Fig. 9, the shaped arm vertically being as Fig. 8.

Wedging.

The wedges for fixing the boxes should be shaped as Fig. 18, the flat side being placed towards the box. The openings to start them in must be made with a strong iron chisel, shaped similar to the wedge, and should be fairly deep so as to give them a good start. At first four only should be inserted, as in Fig. 14, and after these have been driven in fairly tight the wheel should be placed on its axle and turned round, marking the points where the wedges require tightening to make it run true, and always remembering that a very little alteration at the hub will effect a great alteration at the rim of the wheel.

A second series of wedges should be inserted, making it as Fig. 15, and if necessary a third series as Fig. 16. Iron rings as Fig. 17 are fixed on the axle to take the wear from the back of the hub, and iron curved plates are fitted into and fixed to the axle arms to take the wear from the boxes, as well as to reduce friction.

removed far enough to allow of a liberal allowance of the grease being smeared on the axle, and then replaced.

Boxing light wheels or comparatively heavy ones with which iron axles are used is done in the same way, but will be found easier owing to the boxes being in one piece instead of in two parts. Apart

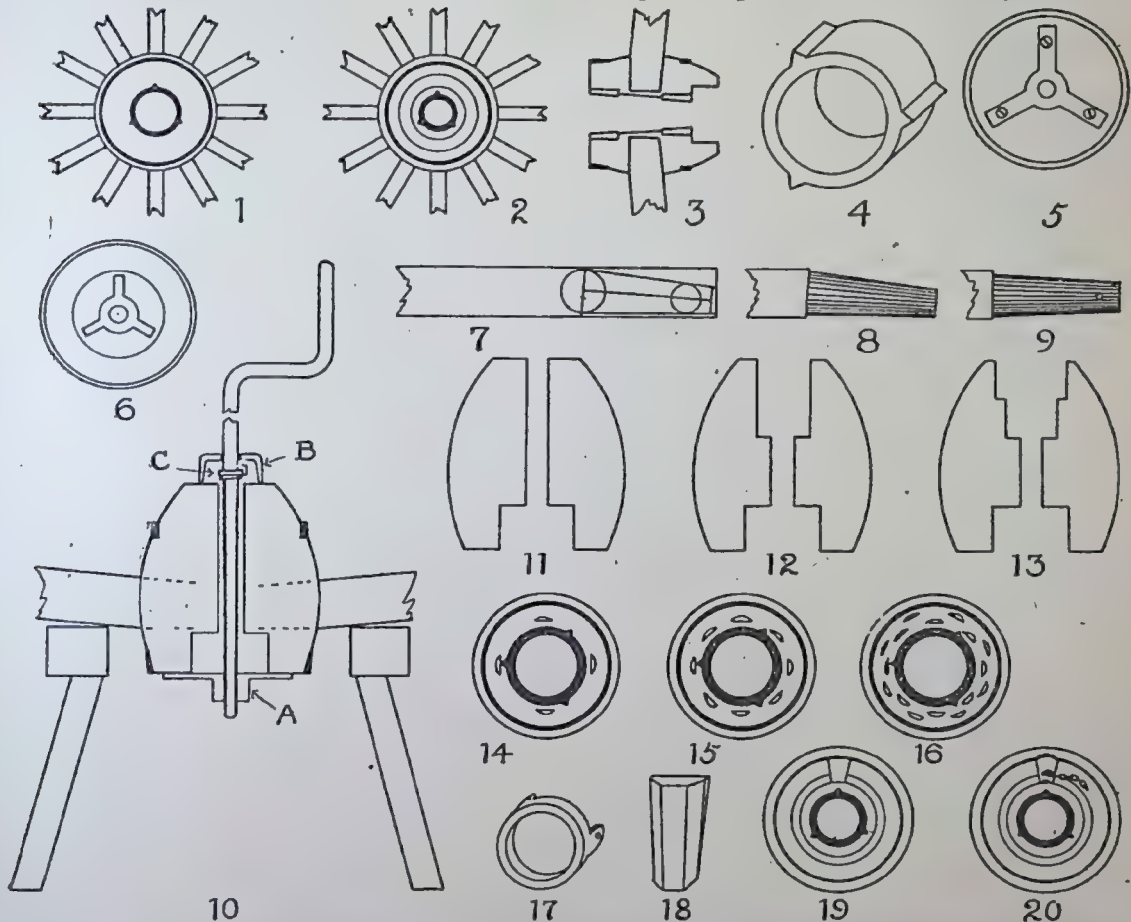


Fig. 1.—Back end of Hub, with Box. Fig. 2.—Front end with Box. Fig. 3.—Section, with Boxes in position. Fig. 4.—Cast Iron Box for back end of Hub. Fig. 5.—Back of Hub with threaded fitting. Fig. 6.—Front of Hub with Boring Bar. Fig. 7.—Setting out Axle Arm. Fig. 8.—Axle Arm shaped (side). Fig. 9.—Axle Arm shaped (plan). Fig. 10.—Sectional detail showing Boring Bar and fittings in position. Fig. 11.—Section of Hub bored, and with recess for back Box. Fig. 12.—Section of Hub with back and front recesses. Fig. 13.—Section of Hub with both Box recesses, also front recess. Fig. 14.—Back Box with 4 Wedges. Fig. 15.—Back Box with 8 Wedges. Fig. 16.—Back of Hub with Box fixed. Fig. 17.—Iron Ring for Axle. Fig. 18.—Wedge. Fig. 19.—Opening for Linch Pin cut in front of Hub. Fig. 20.—Linch Pin cover fitted to Hub.

Linch Pin.

The ends of the axle arms are pierced to take the linch pins, as in Fig. 9, and the hub is cut away as in Fig. 19 to facilitate the insertion and withdrawal of the pin. The space cut away is filled with a removable block, which is kept in the wedge-shape opening by friction only; but to guard against loss this should be provided with a short chain and staples as shown in Fig. 20. This is better than fixing the block permanently, as it allows ready removal for lubricating purposes. The lubricating is done with grease, not with oil; the wheel is

from this the instructions here given will apply.

The hubs of light wheels, instead of being cut away as shown in the drawings, are turned shorter and left solid, the iron hoop at the front being allowed to project. This covers the axle cap and thus answers the same purpose as the recessed hub in the heavy wheels.

NOTE.—The previous articles in this series on Wheel Making appeared in issues of January, February, March, May and July of this year, and may be obtained through any newsagent, price 3d. each, or direct from the Publishers (EVANS BROS., LTD., Sardinia House, Kingsway, London, W.C.), price 4d. each, post free.

WOOD CARVING.

SIMPLE FORMS WITH THE V TOOL.

THE possibilities of the V tool are almost unlimited, and wood-carvers, especially beginners, are advised to give careful attention to the evolving of designs that can be worked by the V alone or with it as the principal tool.

Here we have five suggestions for designs, the principle of which can be applied to many various objects in one form or another, and which can be done almost entirely with the V tool.

Fig. 1 shows a definite pattern which may be wholly executed with a V tool; or it may receive further treatment with gouges to amplify it.

To treat it entirely with a V tool, the drawing itself is self-explanatory. First the outlines are cut. Then down the centre a deeper cut is made

Fig. 1 is an admirable pattern for blotter backs or flat vertical panelling.

Fig. 2 gives a design for a finger plate, all the work being done with a V tool, except the central ornament, which needs a small gouge. The other parts of the design are formed by means of the V tool alone.

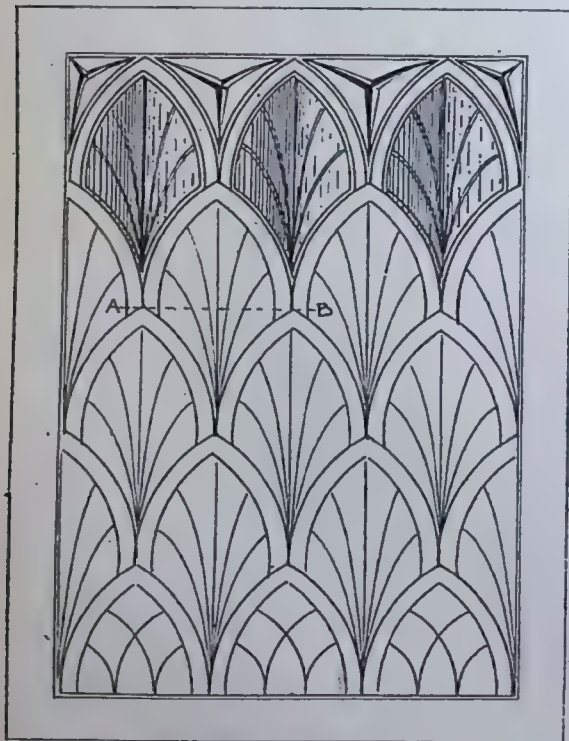


FIG. 1.—DESIGN FOR VERTICAL TREATMENT.
(Section through A B is shown.)

with the V, and with the flat sides of the tool the wood is taken off and a section obtained as across A B. Then the radiating lines are cut, springing from the lower point.

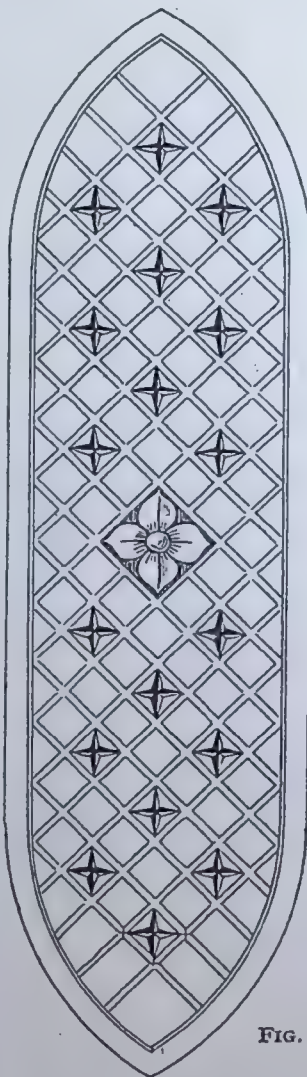


FIG. 2.—FINGER PLATE DESIGN.

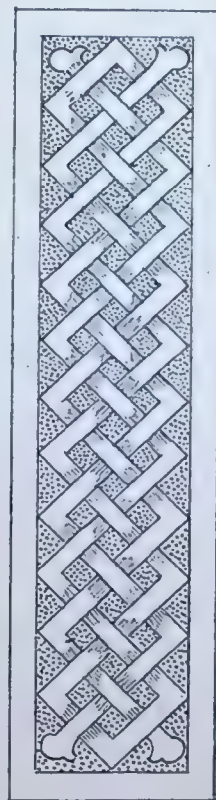
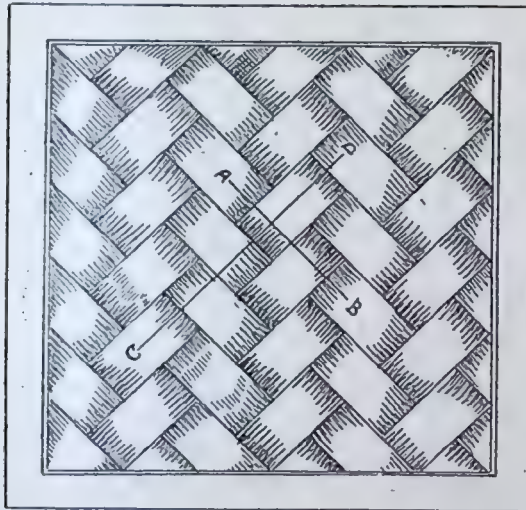


FIG. 3.—DESIGN
SUITABLE FOR BOR-
DER OR FRAME.

Fig. 3 is a design suitable for a picture frame or other article with a narrow border. This is done in the same way as in Fig. 5. Figs. 4 and 5 are suitable for all flat surfaces, such as stools, trays and tables.

Fig. 4 is more intricate, and less simple in its tool work than designs previously given. All the lines or cuts are interrupted after passing over two widths of the bands. When the V cuts are made, each end of the band is lowered to the lowest depth of the cut. At the left is shown a section of the surface on A B; and at the right a section on the line C D. The bands may be lined with a veiner, or they may be shaped with a gouge to various sections.



Section on A B.

Section on C D.

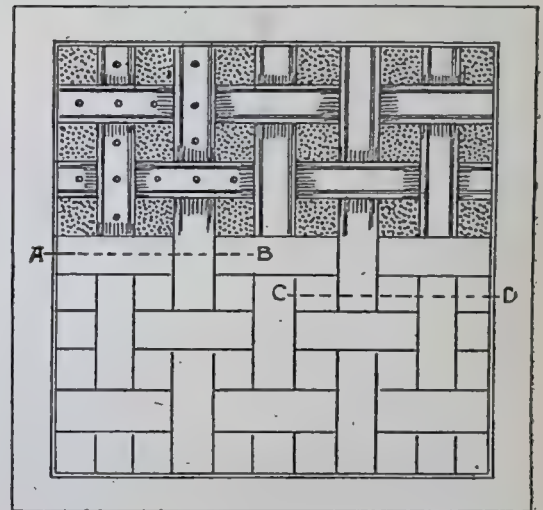
FIG. 4.—SQUARE TREATMENT.

Figs. 3 and 5 show an extension of Fig. 1. The bands are left apart, leaving a square which has to be taken out with other tools. First the V tool outlines the design, and then the squares

are set in with a straight tool, and the wood taken out with a grounding tool. The bands are lowered at each end to give the appearance of plaiting, and the spaces between may be punched.

In Fig. 5 a suggestion is given for the simple treatment of the bands. This is done with a veiner. The bands could also be treated with gouges.

While the designs shown are especially suitable for finger plates, trays, stools, tables, etc., they



Section on A B.

Section on C D.

FIG. 5.—SQUARE TREATMENT.

can be extended in any direction, and thus may be used in other ways. This is a decided advantage possessed by designs that are composed of the simplest elements.

To Lovers of Beautiful Furniture.

There is no work in furniture more beautiful or more comprehensive than Herbert Cescinsky's "English Furniture of the Eighteenth Century." In three large volumes the Golden Age of cabinet-making in this country is reviewed in an exhaustive manner and with a wealth of illustration never hitherto attempted. There is no greater living authority than Mr. Cescinsky on the subject, and, quite apart from the descriptive letterpress, so accurate historically and technically, the 1,300 matchless photographic reproductions combine to form a veritable museum of the finest woodwork. The complete work in three volumes—and a work of art it is—at present is being offered at a considerably reduced price by The Waverley Book Co., Ltd., of 7 and 8, Old Bailey, London, E.C., who, on receipt of a postcard from anyone mentioning that he is a reader of THE WOODWORKER AND ART CRAFTSMAN, will send a prospectus giving full particulars of their special offer.

A Durbar Model.

The King has lent to the Victoria and Albert Museum a model (made by Indian craftsmen) of the pavilion used by His Majesty and the Queen during the concluding portion of the coronation ceremony at Delhi on December 12th, 1911. The model includes reproductions, also to scale, of the solid silver-gilt throne on which their Majesties sat during the reading of the proclamation. The original pavilion with its conspicuous golden dome and marble and gilded pillars, raised on a pyramid of platforms, formed the central object in the vast Durbar amphitheatre. The model, which was recently presented to His Majesty by the Viceroy of India, is exhibited in Room I of the Indian section.

PLAIN MAHOGANY, without particular colour or figure, when stained to imitate walnut is wonderfully improved, and it makes a splendid imitation or substitute for the walnut.

REPOUSSÉ WORK.

SWITCH AND BELL PUSH COVERS.

ALMOST every house is now fitted with electric bells. Many neighbourhoods are also lighted with electric light, and it is worth while considering the question of repoussé covers for the switches and bell pushes. In many houses these are grouped together near the door, in other cases they are placed individually in convenient situations about the room.

In designing bell pushes and switches it is best to make the purpose of the fitting clear, and not disguise the push or switch as a centre to flowers of naturalistic character or otherwise conceal its use.

chisel, and pierce the holes for the screws. The colouring of the metal will of course be in accordance with the rest of the fittings.

Switch Cover—Fig. 2.

Switch covers, when the walls have not been prepared to receive the wires, often require to be highly domed. It is in this case much better to increase the depth of the wooden boxing than to make the metal covering of a bell shape. Fairly thick metal must be used, and the doming beaten up in a depression in the beating block and finished on a round-headed stake. A

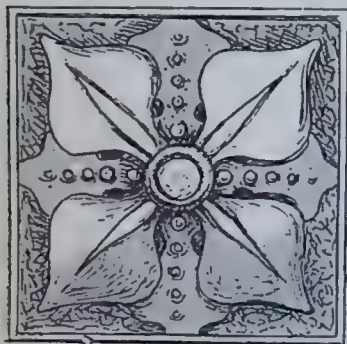


FIG. 1.—SQUARE BELL PUSH.



FIG. 2.—CIRCULAR SWITCH.



FIG. 3.—CIRCULAR PUSH.

In cases of electric switches, which are fitted with high domed covers, it may be necessary to have an extra piece of wood with suitable holes pierced in it added to bring the box nearly flush, but for ordinary pushes and switches all that is required is to screw off the present cover and replace it with the new one.

Thin metal should be used, and the work should be carried out on a pitch block, as it is necessary that the holes, &c., should fit with perfect accuracy.

Bell Push—Fig. 1.

To begin with Fig. 1, trace the design on to a piece of copper or brass, about $3\frac{1}{2}$ ins. square. Follow this out by means of a tracer. Then work a heavy line round the outside edge and round the centre where the hole is to be pierced and dome up the middle of the leaves. Reverse the metal on the pitch, filling up the domed parts thoroughly, and sharpen up the details from the front, making the modelling crisp and clean. With a broad flat planishing tool work over the background. Before finishing, it is well to try the cover in position, so that if any higher doming is necessary it can be done. Then cut the centre hole, with either a fret saw or

wreath (as in Fig. 2) is carried out mainly from the front, the work from the back consisting of a few punched marks. The lacquer should be removed from the finger piece of the switch, and it should be darkened to accord in finish with the cover. Brass round-headed screws must always be used for fixing, to allow of easy removal if it is necessary to examine the interior.

Other Covers—Figs. 3, 4 and 5.

Fig. 3 gives a cover suitable for a flush switch or a bell push, and Fig. 4 shows the same idea arranged for two switches or a switch and a bell. Both are easy to carry out and would look well worked on thin copper in repoussé only (that is, with no tooling from the front); this gives a softer effect as the outlines are less strongly emphasised.

The three-way switch shown in Fig. 5 is very effective. As originally carried out it was mounted on an ash shield, stained a deep verdigris green which showed through the interstices. Dark mahogany or walnut would also look well and would accord better with some schemes of decoration. The edges must first of all be outlined with a highly raised line, formed by working a deep groove from the back, then reversing the

metal and driving a line round it with a tracer held on the slant, so as to give almost the appearance of undercutting. This is followed in those parts which are to be removed by the cutting chisel, also worked at an angle, so as to leave a rounded edge by driving the extreme edge underneath. It is best to leave the actual cutting to the last, as the open parts might be broken in the course of carrying out the rest.

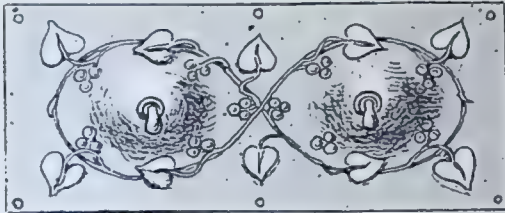


FIG. 4.—COVER FOR TWO SWITCHES.

The centre of each part of the trefoil must be slightly domed before working the lines of the pattern. The roughening of the small triangular space is carried out by means of a ring tool. Do not let the marks show as separate circles, but impress them one over the other, giving something of a scaly appearance.

If the actual pushes can be obtained of a bright green stained ivory, matching the board, the effect is greatly enhanced; otherwise, if there is

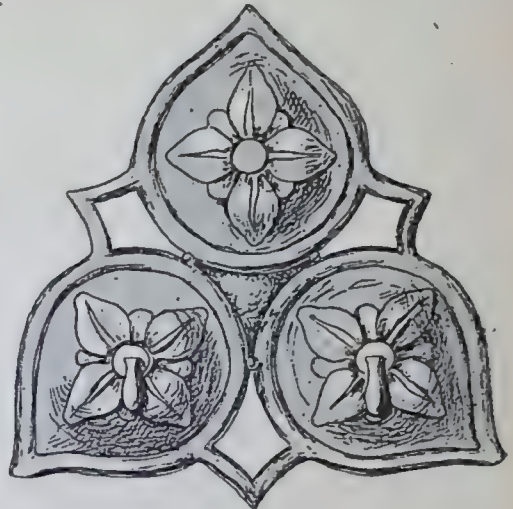


FIG. 5.—TREFOIL SWITCH AND PUSH.

any choice, black gives a pleasing touch. Dead white is a little bright, but can easily be toned down with a little varnish stain.

THE CRAFT AND ART OF BOOKBINDING.

BOOKBINDING, especially when combined with tooled leather work, has for many years been a favourite art craft, and one probably that would be practised far more widely if the correct method of binding or re-binding books were more fully understood. The stimulus given by Ruskin and Morris in the blending of design and craft did much towards cultivating a taste for artistic bindings, and more recently the report of the Society of Arts Committee on the binding and care of books has re-awakened interest in what is one of the most important of handicrafts. The essentials of any binding are: (1) That the printed sections are sound in themselves, without any odd sheets or plates pasted on, or anything else that may prevent a leaf from opening right to the back; (2) the sewing materials must be good, the sewing itself thoroughly strong, and the slips firmly attached to the boards; (3) the leather (even if it may have surface flaws) must be of a durable quality and fairly thick. The ornamentation of the covers is so much waste labour if the leather is of a kind that will deteriorate, or if the book itself will fall to pieces after a few years' use.

The ordinary cloth covered book, as issued by the publishers, is not really "bound"; it is merely "cased," the boards being covered separately, and then glued on to the sewed book. In "binding" proper, the sewing slips are firmly attached to the boards before covering, a method that ensures durability. Many valuable books are of course issued in obviously temporary boards, the intention being that the purchaser may have them bound in leather to

suit his own tastes. Such books are usually well sewn otherwise, and are useful for the leather-working craftsmen whose interest lies chiefly in the final and more decorative stage of binding.

For the amateur or the professional binder, whether engaged in plain casing or ornamental covering, we do not know of any handbook at a moderate price which, for practical usefulness, stands on the same plane with "Bookbinding and the Care of Books,"* by Douglas Cockerell, in the "Artistic Crafts" series, edited by Professor Lethaby. In every detail, from the printed sheets to the fitting of metal clasps on a finished book, Mr. Cockerell is thorough. He has the great advantage of being a master of his subject, and on each successive process not only are his directions clear, but he has a clear reason for his directions. The book is admirably schemed, and with the aid of the glossary and index the worker can always find what he wants. The text is fully illustrated, and at the end there are several collotype reproductions of leather bindings. Quite apart from its special value to those who go in for any branch of binding, plain or decorative, the volume is one which the general reader who knows or cares anything about books will find of the greatest interest. The fact that it has now run into its third edition is an indication of its service to craftsmen.

* "BOOKBINDING AND THE CARE OF BOOKS," by Douglas Cockerell (Artistic Crafts Series, edited by W. R. Lethaby.) Third Edition, 340 pp., 122 illustrations and 8 collotype plates. Crown 8vo., 5s. net. John Hogg, 13, Paternoster Row, London, E.C.

FLOWER STAND.

USEFUL ORNAMENT FOR HALL OR BAY WINDOW.

AT a time when many a garden lover is reaping the reward of his ardent labours a suggestion for a flower stand may prove interesting. Such an arrangement for instance as that sketched here, placed in the hall, bay window, or other suitable position, would provide an attractive resting place for a succession of floral favourites, and win ready appreciation from the visitor when entering. On the lines of the sketch (Fig. 1) the stand could be worked out to a height of 4 ft. 6 ins., and a width of 3 ft., the depth being about 18 ins. over all, or narrower if space is not available.

The front elevation (Fig. 2) shows that it is intended to place boxes upon the shelves, an arrangement preferred by some to mask the assertiveness of the ordinary ruddled flower-pot. Where ornamental bowls are available to contain the flower-pots boxes can be advantageously dispensed with. As sized on Fig. 3 a space of 2 ft. 4 ins. is allowed between upper and lower shelves, thus accommodating pot plants of medium growth.

THE WOOD used may be well-seasoned American whitewood, or bass finished in white enamel or painted white and varnished. Pine may be used instead of bass wood, but is more liable to show bruises in course of wear.

Back of Stand.

UPRIGHTS. In getting out the parts a start may be made with the back (Fig. 4). For the uprights A two lengths of 4 ft. 6 ins. will be required, to finish 3 ins. wide by $\frac{7}{8}$ in. thick. The inner edges will need mortising for the tenons on rails BCDE to enter, and the face side also for the entry of parts G, J and L as indicated in Fig. 3. The bottom ends are to be dovetailed to enter the feet M, afterwards being screwed slightly askant to them. The top ends are capped with pieces of $\frac{3}{4}$ in. thickness, 4 ins. by $1\frac{1}{2}$ in., finishing flush at back, but with rounded edges to project at front and sides. These can be nailed on and the holes stopped.

RAIL B can be allowed a piece 3 ft. long by 4 ins., to finish $\frac{7}{8}$ in. thick. In shaping it the curved part can be 2 ins. to $2\frac{1}{2}$ ins. wide, with a break in the centre below to receive the three uprights as indicated.

RAIL C will finish in line with the upper shelf, and may be allowed a finishing width of 3 ins., tenoned each end into uprights.

RAIL D may be also 3 ins. wide if a separate box is to be made, or it may be got out to finish the same width as the corresponding front of box (say $7\frac{1}{2}$ ins. wide), of which it can form part. Reference will be made to this later.

RAIL E can be $2\frac{1}{2}$ ins. or 2 ins., or can be dispensed with if the wider rail D is fitted.

CENTRE UPRIGHTS. For these (F) three lengths of 4 ft. will allow for joints, the width and thickness being $1\frac{1}{4}$ in. by $\frac{3}{4}$ in. respectively. They

are intended to be halved into the rails C and D and stub-tenoned into rails B and E.

The Sides.

TOP RAILS (G, Fig. 3). The two top rails may be got out $10\frac{1}{2}$ ins. long, including joints and shaped front ends, to be tenoned right through uprights A and mortised to receive uprights H. Stuff $1\frac{1}{2}$ in. thick and 2 ins. or $2\frac{1}{2}$ ins. wide is allowed for this, but if preferred the part may be of 1 in. stuff 3 ins. wide, to be fitted as a narrow shelf.

UPRIGHTS H, 4 ft. long, may finish $1\frac{1}{2}$ in. wide by $1\frac{1}{2}$ in. thick, the latter dimension showing on the side elevation. They are tenoned each end to enter G and M, mortised for rails J, and halved flush into rail L. The shorter uprights I, 3 ft. 3 ins. by $1\frac{1}{2}$ in. by $1\frac{1}{2}$ in. fit into position similarly.

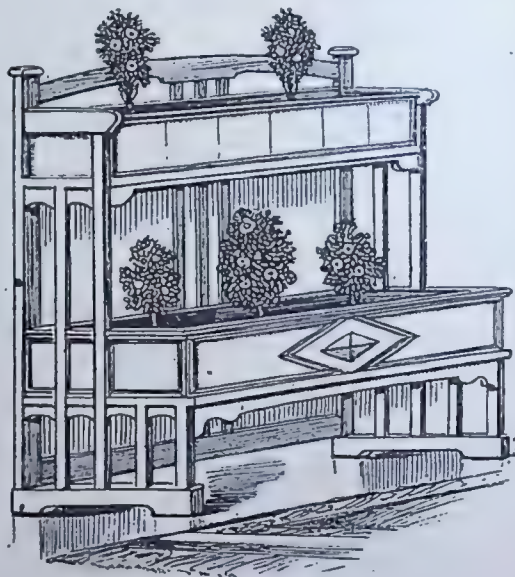


FIG. 1.—HALL FLOWER STAND.

SHELF RAILS J will take pieces 9 ins. by $1\frac{1}{8}$ in. by 3 ins. wide, to be tenoned into uprights A, notched into uprights N, and slotted on the inner edges to receive the dovetailed rails which form the shelves. In notching into the uprights a small screw can be inserted askant from the underside through the tenon as a stiffening hold.

SMALL ARCHES K can be dowelled into position and screwed to the rail above. Twelve will be required, and if fitted separately can be cut from pieces 3 ins. by 3 ins. by $\frac{3}{8}$ in. The row of arches may, however, be shaped from one piece to be halved to the uprights, screwed from behind and dowelled or stubbed into A and N.

RAILS L will take two pieces 1 ft. 6 ins. by 3 ins. by $1\frac{1}{2}$ in., tenoned to enter back rails A, notched for uprights I and H to enter flush, and mortised to

receive uprights N. At Fig. 5 it is also shown to be fitted with, say, four dovetailed rails, as J to form the wider shelf about 12 ins. above the floor.

THE TWO SHAPED FEET M on the under side should be allowed a length of 18 ins. full, to finish 2 ins. thick by $2\frac{1}{2}$ ins. to 3 ins. wide. They should

The back of box can be framed into back of stand, the sides screwed to the side uprights H and I, and the front then screwed on to the sides. By way of relief lengths of $\frac{3}{4}$ in. mould can be cut and mitred up to form the diamond pattern indicated on sketch. In the centre of this a 6 ins. by 3 ins.

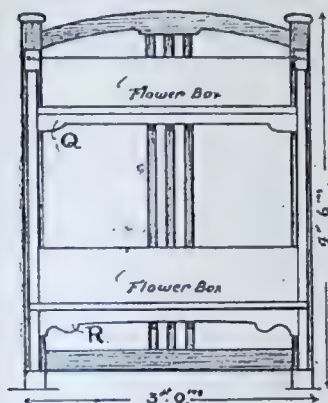


FIG. 2.—FRONT ELEVATION.

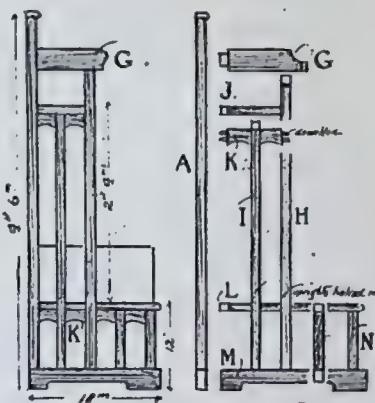


FIG. 3.—SIDE ELEVATION AND DETAILS.

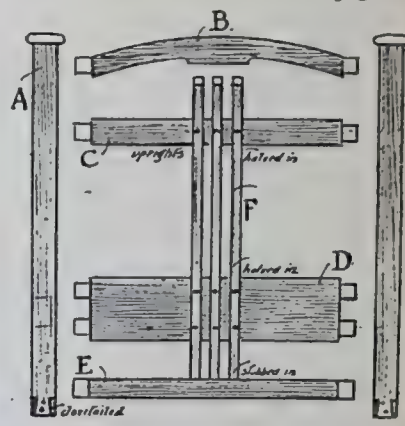


FIG. 4.—BACK PARTS.

be carefully mortised for the uprights to enter, and the back end also dovetail-slotted to receive the dovetails on uprights A.

SHORT UPRIGHTS, A. For these uprights four lengths of 12 ins. will do; they finish $1\frac{1}{2}$ in. by $1\frac{1}{8}$ in. and are tenoned top and bottom into position.

LATHS. Lengths of 2 ft. 9 ins. will serve for the dovetailed laths, those at O, Fig. 5, for the upper shelf finishing $1\frac{1}{2}$ in. wide by $\frac{3}{4}$ in. thick, and those for the lower shelf P 2 ins. wide by $\frac{3}{4}$ in. or $\frac{7}{8}$ in. thick. If carefully fitted they need not be nailed to the rails. The front laths are set back a trifle within the line of the uprights, and a length of rounded slip or nosing butted between the side rails J and L above the apron pieces. These latter will require lengths of 3 ft., the upper one under shelf Q finishing $2\frac{1}{2}$ ins. wide by $\frac{7}{8}$ in. and the lower one R $3\frac{1}{2}$ ins. at widest part.

The Flower Boxes.

It is necessary to have some arrangement which will prevent the watering of the plants above from dripping on those below or the floor. Failing some kind of art pot, therefore, a box with zinc lining will be serviceable. In the sketch (Fig. 1) the upper box is indicated as fitted with tiles to the front, and may be made loose to lift out. It can finish about 8 ins. high and 8 ins. back to front, and can be knocked up out of stuff $\frac{3}{4}$ in. or $\frac{7}{8}$ in. thick. Tiles are easily fitted after the box is made, lengths of $\frac{3}{4}$ in. or $\frac{7}{8}$ in. rebated mould mitred at ends being nailed on top and bottom of front, so that the 6 in. tiles slip in between and are fixed by the mitred end pieces. If the tiles do not quite fill up the front, narrow slips of the same colour are obtainable to make up. Tiles are procurable through any local builder.

The lower box, being larger, is intended to be a fixture which will make the whole thing rigid.

bevelled mount of $\frac{3}{4}$ in. stuff can be nailed or screwed on. The box sides are also moulded to butt flush up to the uprights, about 30 ft. of mould being required.

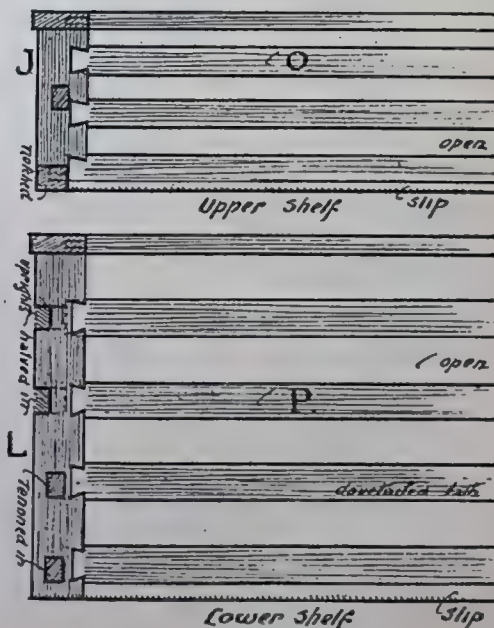


FIG. 5.—PART PLAN, SHOWING FITTING OF SHELVES.

When the boxes are made they should be measured inside for the zinc lining, which can be obtained from the local tinsmith for a moderate sum. A cutting list of parts will be found on page 253.

FRETCUTTING AS AN ART CRAFT.

THE ADVANTAGE OF THE OVERLAY.

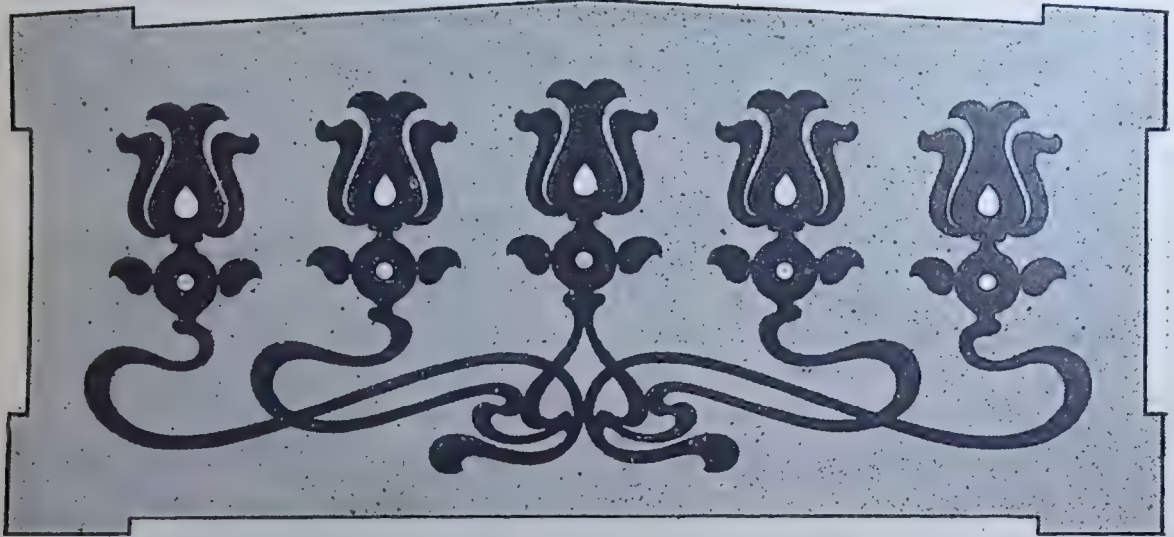
WITHIN recent years fretwork has become a remarkably good paying pastime. The reason for this is that many modern designs, instead of being of the old-fashioned florid and fragile type, are of a solid character, and when skilfully carried out are both artistic and useful. Thus far, the average craftsman in wood or metal has failed to observe this change which has come over a form of woodwork on which he has always been accustomed to look down. He has hitherto ignored fretwork partly because it is a flat form of decoration produced largely by mechanical work, and partly because the old style of elaborate design proved, when completed, to be a very fragile receptacle for dust.

Certainly many of the ordinary "fretwork" patterns are open to this reproach. Two circumstances, however, have combined to produce the change referred to:—(1) Designers have found that the fretworker

illustrated etc, producing a miniature rack for small keys or glove-button hooks. Five small nickel or brass hooks will be screwed in the circular parts provided for them, these helping to hold the overlay.

An additional effect might be had by *underlaying* the small openings in the floral parts. The way to do this is as follows. Before the overlay is fixed down, the positions of these five small openings are marked in the background. With a sharp chisel a little bit of ground (slightly larger than the opening) is gouged out to a depth of, say, 1-16 in. Into this is inlaid a piece of different coloured wood, or metal or xylonite. Thus, when the overlay is fixed, the underlays add to the importance of the floral features.

It will be seen that the ornament could be inlaid instead of overlaid. And here it may be indicated how, from the artistic craft point of view, overlaying is in practice very similar to inlaying. Inlaying has



DESIGN FOR KEY RACK—SOLID BACKGROUND WITH OVERLAID ORNAMENT.

can more easily sell—and at a better price—a quiet artistic ornament, and (2) the development of the *overlay* not only provides relief, but gives a solid in place of a delicately-fretted article. The design shown here illustrates both these features. A key rack design of old would have been a highly ornate fret in thin wood, every edge accumulating dust and every point threatening to break off. In the design shown the background is a solid piece of wood, 1 in. or 1½ in. thick according to size. The ornament, delicate in itself, is an overlay, and when mounted in position runs no chance of meeting with an accident. The overlay may be in wood, not over 1-16 in. thick, but preferably it will be in ivory-white xylonite, 1-25 in. thick, or in aluminium or brass of about 1-32 in. A useful key rack would be one of twice the size shown, about 11½ ins. by 5½ ins., but there are many expert cutters who will no doubt make use of the design as

all along been recognised as one of the art crafts, and there is no reason why the overlaid fret should not be given the same place. Colour combinations can be obtained in overlaying as in inlaying, and this aspect of the subject will be dealt with later. In the present case the two intermediate flowers with their curved stems could be cut in different colours.

Many amateur and professional woodworkers already add—and others might—to their incomes by practising some of the more artistic forms of fretwork. Xylonite, specially prepared for the purpose, offers a capital medium for overlaying; metals, such as brass and aluminium, are also becoming much more widely used; and although the wood fret need never be relegated to a back place it is now capable of being used in a way that will produce more useful and artistic results than have hitherto been apparent.

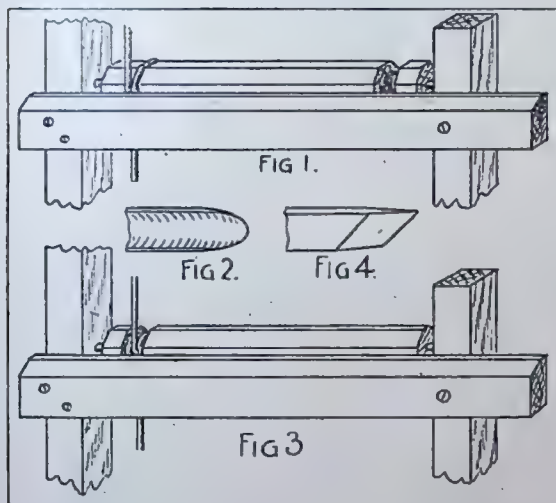
HOW TO USE THE POLE LATHE.

MAKING A RULER.

THE scope of the pole lathe is limited, but as it is hardly probable that anything more than a spindle form will be required we shall be able to satisfy the desire of the beginner or amateur for an inexpensive lathe, such as we described on page 205 of the August issue.

It must be remembered that the wood is revolved by means of the belt which is wrapped round one end, and that the smaller the diameter this end is, the greater the number of revolutions it is possible to get. The best method of attaining this result is to cut a groove for the belt to run in, and thus reduce the diameter as small as possible.

MAKING A RULER.—One of the best ways of getting into the method of using the lathe is to make a round ruler about 12 ins. long and $1\frac{1}{2}$ in. diameter. The wood may be yellow pine or American whitewood; both are soft and even in texture, and although it will not be possible to get the same finish as with a hardwood it is better to commence with a soft wood.



ILLUSTRATING THE USE OF THE POLE LATHE.

Take an 16 in. length of $1\frac{1}{2}$ in. square wood, mark diagonals at each end and bore holes $\frac{1}{2}$ in. deep with a pin bit or gimlet, just a trifle larger than the size of the screw heads which form the centres. The corners of the wood should now be taken off with a plane, and the wood fitted between the centres with the belt wrapped round as indicated at Fig. 1. The end upright as well as the tool rest should now be screwed up tight, and the wood is ready for operations.

WORKING THE LATHE.—On pressing down the treadle two or three times it will be seen that one or two revolutions only are made, but as long as there is one complete turn it will suffice. The first tool to use is a gouge. This may be an ordinary carpenter's firmer gouge, ground as indicated at Fig. 2, or if possible it should be a proper turner's tool with a long handle. To commence the actual turning the

gouge should be placed firmly on the tool rest with the extreme cutting edge on a level with the centres, and as the wood revolves downwards the tool should be pressed against it and held tightly. It may be that the pressure is too much and the wood is stopped, or else insufficient pressure may cause the wood to drive the tool away; in either case a little practice will soon rectify the fault, and in a very few revolutions the gouge will cut a groove in the wood. The base of the groove should have a diameter of about $\frac{3}{4}$ in., and be about the same distance across. When it is neatly finished the wood should be taken from between the centres and reversed as indicated at Fig. 3.

TURNING THE RULER.—The result of the groove will be seen at once, and the number of revolutions together with the speed will be considerably increased. A space of about 14 ins. should now be rounded with the gouge, care taken that the diameter is not reduced too much. To avoid this a turner uses a pair of callipers. The best way of getting the required diameter is to carry the tool along the rest and take a little off each time; it is easier to keep the cut true this way than cutting down and carrying a deep cut along. To make the wood quite smooth substitute a chisel for the gouge and proceed in the same way; the correct angle for holding the chisel will soon be found. An ordinary firmer chisel is not of much use in turning, for the blade should be slightly skewed at the end and ground and sharpened on both sides as indicated at Fig. 4. A smooth finish may be given with glasspaper, but with a hard wood a good turner will finish with the chisel alone.

DETACHING.—The ruler may be cut to length on the lathe or taken out and sawn to the correct size. If the former method is to be followed it will be necessary to use a parting tool; a narrow sash tool or mortise chisel will answer quite well. The tool should be carefully pressed into the wood at the proper distance, taking a little of the waste out at each end so as not to weaken the wood too much at one place. The last bit may be cut with the chisel held with its cutting edge upright and pressed into the wood.

A CORRESPONDENT writes us: "The pole lathes shown in the last two numbers of THE WOODWORKER AND ART CRAFTSMAN closely follow the lines of one I devised many years ago, which was illustrated in my book on *Elementary Design and Handicraft*, published by Macmillan and Co. in 1893. It possessed, I think, some advantages over the later examples: notably that, instead of filing off the heads of screws, their points were used for centres, thus giving the means of a very desirable adjustment. As to the loss of time in the idle return stroke which you mention, I believe that with beginners (and indeed with others whose practice is only occasional) this seeming loss is an actual gain, because it lessens the risk of disaster from the tool digging into the work. By a fortunate coincidence the interesting revival of this subject in your columns has synchronised with the production in marketable form of the result of my experiments towards the attainment of an ideal portable lathe, illustrated on the front cover."—W. A. S. Benson.

ELEMENTARY WOODWORK.

A SIMPLE BOOK REST.

THE book rest shown at Fig. 1 is a useful piece of furniture and easily made. The choice of wood depends on the amount of practice one has had in the plane and chisel; if fairly proficient a choice may be made between oak, walnut and mahogany, but a beginner will be well advised to keep to American whitewood or satin walnut.

MAKING THE REST.—For the sides, top shelf, under framing, and the two long sides of the drawer, it will be necessary to provide a 3 ft. length of 9 in. by 1 in. board, and carefully plane the whole piece to $\frac{3}{4}$ in. thick, taking off as little as possible from the edges. The two sides should be marked out, the curved ends being placed so that they fit in one another to economise space. A fret, bow, or pad saw should be used to cut the two sides apart, but it will probably be found more convenient to mark out the grooves and cut them down before the sides are sawn apart. The grooves should be marked to the dimensions shown at Fig. 2, and carefully sawn out, with the waste from the saw taken out of the *inside* of the line in each case. A $\frac{5}{8}$ in. or $\frac{1}{2}$ in. chisel should be used to remove the waste, and considerable care be taken to keep the base of the grooves level.

The curved top of the sides should be smoothed and trued up with a spoke-shave so as to complete them as indicated at A. The top shelf should be planed to 8 ins. wide and cut to exactly 14 ins. long. The long portions of the frame under are 1 in. or so wide, and the same length; the short lengths, as indicated at C, should fit in between and project at least $\frac{3}{4}$ in. If the shelf and under frame pieces fit in the grooves quite tightly it will be sufficient to glue them in; if, however, they are slack it will be necessary to screw them in from the outside, this being very neatly done.

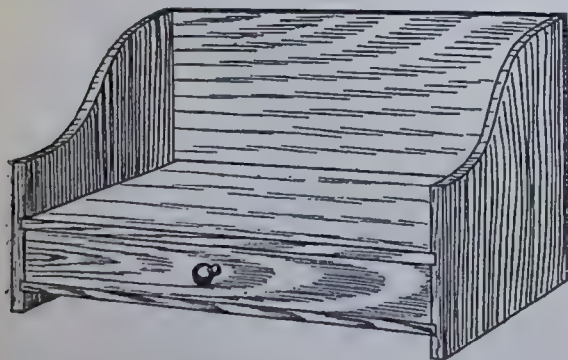


FIG. 1.—SKETCH OF SIMPLE BOOK REST.

DRAWER.—The usual method of making a drawer is to dovetail the corners. This is rather a difficult operation for the beginner, and as the joint is practically useless if it is not properly made a more simple method is suggested. First of all a piece of the $\frac{3}{4}$ in. wood is carefully fitted in the open space, and then both ends and the lower edge are rebated to within $\frac{1}{4}$ in. of the front and to a depth of $\frac{1}{4}$ in. as indicated at E.

This may be quite easily done with the tenon saw if a deep gauge line is first of all made on the edges and back. It may be necessary to trim up a little with a chisel, but there is no need to use a rebate plane unless one is at hand. The back of the drawer should be

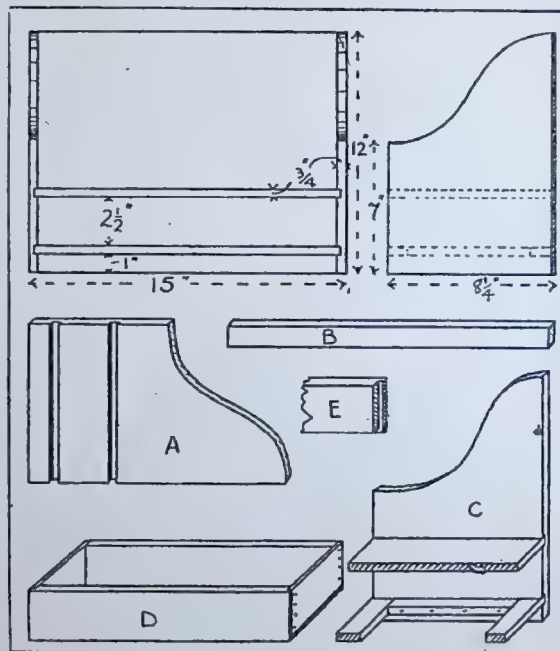


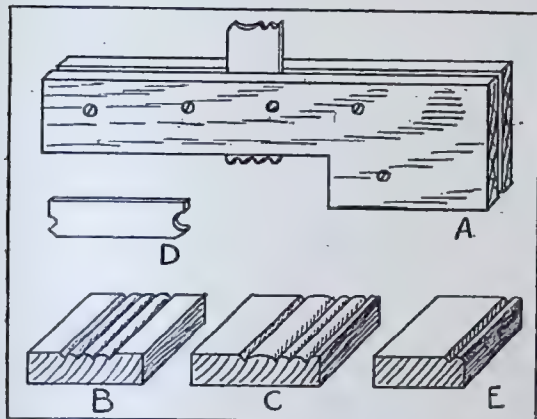
FIG. 2.—DETAILS OF BOOK REST.

$\frac{3}{4}$ in. thick, $\frac{1}{4}$ in. shorter than the front, and $\frac{1}{4}$ in. narrower, the sides being the same width as the back and $\frac{1}{4}$ in. thick. The method of nailing the drawer together is indicated at D, the front, back and side being firmly held together by means of the $\frac{1}{4}$ in. thick base which is nailed on. All nails should be driven just below the surface with a nail punch so that the edges may, if necessary, be trued up to run smoothly. A handle of some kind should be fitted and the work may be finished in any desired way. If whitewood is used it should be stained and then wax polished; a hardwood may be polished straight away.

WOODWORKING JOINTS.—Every beginner should have at hand a pocket guide which clearly describes all kinds of joints used in carpentry and joinery, showing how to set them out and for what purposes they are best suited. The sixpenny handbook, "Woodwork Joints: How to Make and Where to Use Them," in THE WOODWORKER series, explains how to form mortise and tenon joints, lap joints, dovetail joints, scarfing joints, and others, and is a most useful guide for young woodworkers. The book may be had for sixpence, or post free for sevenpence, from EVANS Bros., Ltd., Sardinia House, Kingsway, London, W.C.

A SIMPLE BEADING AND REEDING TOOL.

THERE are times when every amateur requires the use of a tool capable of working a bead, or perhaps a reed, on a piece of wood, and yet does not want to go to the expense of a special plane. It is quite possible to do a considerable amount of work with a simple tool as shown in the illustration at A. It is made with two pieces of beech, walnut or



BEADING AND REEDING TOOL.

A—The Tool. B and C—Reeds Cut. D—Bead Iron. E—Bead Cut.

sycamore, about $\frac{1}{2}$ in. thick, cut to the shape shown. Three or four screw holes should be made along the top, with an extra one at the large end, fairly stout screws being used to connect the two pieces and hold the iron in position.

THE CUTTING IRON.—A small piece of steel acts as a scraper. Pieces from a broken tenon saw do very well, but any small piece of thin scrap steel may be used. The metal should be softened by heating to red heat, slowly cooled, and then shaped with suitable files; after being tempered the flat sides should be rubbed on an oilstone. The best way to temper small pieces of steel is to rub them up quite bright and heat them up to a pale straw colour; they should then be quickly cooled by dipping them into oil.

TO USE THE TOOL first set the iron in position, tighten up the screws and then, with a little pressure, push the iron at a forward slant with the grain. It is impossible to expect any clean work across the grain, but the surface may be finished with glasspaper.

In the illustration B indicates the reed made with the iron shown in position at A; C indicates another reed cut from the upper edge of the same iron. The bead shown at E is easily made with an iron shaped as indicated at D. It will be seen that any number of shapes may be made and, when once the knack of using the tool has been found, there will be no need for the amateur to invest in a set of special planes.

THE present volume of THE WOODWORKER AND ART CRAFTSMAN commenced January, 1913. All back numbers are available, price 4d. each post free. Annual subscription in Postal Union, 4s. post free. EVANS BROTHERS, LTD., Sardinia House, Kingsway, London, W.C.

THE TENON SAW. WHEN AND HOW TO USE IT.

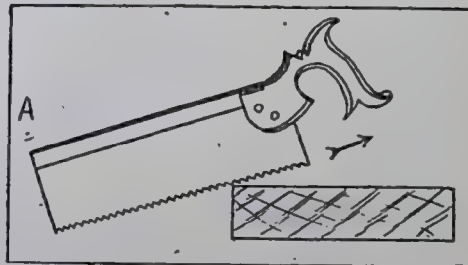
FOR small work it is almost impossible to do without a tenon saw, but owing to its thin blade it is a tool requiring considerable care in use. A beginner may easily buckle the blade to such an extent that it is rendered incapable of sawing straight, but with a little care it may be used as easily as a hand saw. The use of the hand saw was explained fully last month.

The tenon saw is used to cut across the grain when a fine saw cut is needed, and it is also used in sawing with the grain of small pieces of wood. The back prevents the use of the saw for making deep cuts or even for sawing long lengths of thin wood, but there is so much use for it in ordinary woodwork that it is almost indispensable.

Before making a cut with a tenon saw it is advisable to mark the line with a knife or chisel and then commence the cut by drawing the saw upwards, the thumb being placed on the corner of the wood to act as a guide. The correct position is indicated below, the arrow showing the direction of the saw to complete the commencing cut.

The same remarks regarding the necessity of sawing on the waste side of the line apply just as much to the tenon as to the hand saw, which was described last month. The whole length of the blade should be used as far as possible, and it is unnecessary to exert any vertical pressure or to force the saw through the wood; the latter is a frequent cause of buckling the blade.

It will be remembered that the hand saw is used at an angle of 60 degrees or so, but the tenon saw should be held in a horizontal position after the cut is commenced. This does not mean that directly the start is made the saw should at once be placed in a horizontal position, but the saw cuts should be taken



HOW TO USE THE TENON SAW.

further and further along the line until the back of the saw is level. This will happen when the whole of the line has been sawn against and not before.

If the blade of a tenon saw should at any time become buckled (and a glance along the edge will soon prove this), the fault may generally be rectified by holding the saw firmly in the left hand and smartly tapping the extreme end of the back as indicated at A.

Light tenon saws may be had as small as 8 ins. from 1s. 6d. upwards. For very fine dovetail saws, with heavy brass backs, the price is considerably higher. Saws of from 8 ins. to 10 ins. are used for cabinet work, but for general carpentry sizes up to 18 ins. are used, those with brass backs being higher in price.

WOODWORK PUZZLE.

HOW TO MAKE AND HOW TO PUT IT TOGETHER.

THE ingenious puzzle of the Chinese type shown here is probably older than many of us could guess, but as it is one that can be made by any woodworker, we give full directions as to how it may be constructed. For the benefit of other readers into whose hands the finished puzzle may fall, we give also the key as to how it may be taken down and fitted together again.

The complete article as shown in Fig. 1 may be called, in form, a six pointed pyramid. It is made up of twenty one different pieces, each cut from wood $\frac{1}{2}$ in. wide and $\frac{1}{2}$ in. thick; $\frac{3}{4}$ in. wood may be used if preferred. For the purpose either sycamore or white maple is the most useful.

The Twenty-One Parts.

The pieces required are as follows:—

FIG. 2.—Six pieces, $3\frac{1}{2}$ ins. long, with a half slot cut in the centre as shown. This slot must be exactly the width of the wood's thickness, and cut exactly half

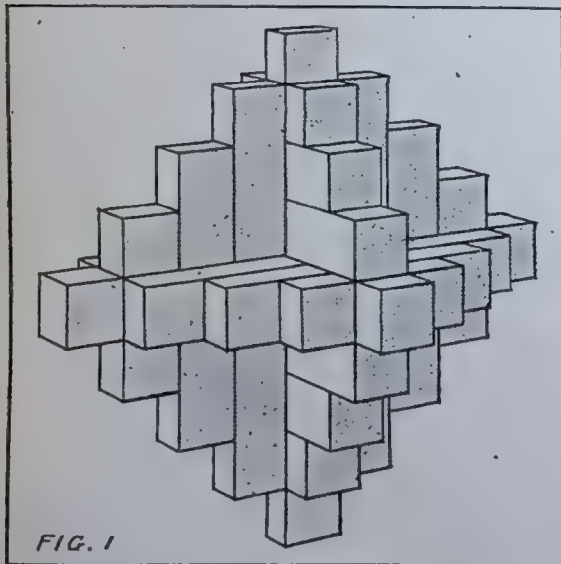


FIG. 1

SKETCH OF THE COMPLETED PUZZLE.

way through, so that, if two pieces are placed across by means of the halved joint, their surfaces will be flush. The slot must also be exactly in the centre.

FIG. 3.—Six pieces, size $2\frac{1}{2}$ ins. long, with a half cut centre slot similar to that of Fig. 2.

FIG. 4.—Six required, these being $1\frac{1}{2}$ in. in length, and with slots in the middle as before.

KEY PIECE (FIG. 5).—One of these last six requires special treatment, as it forms the key block of the puzzle. After its slot has been cut, one half of the narrow part must be sawn away, as shown in Fig. 5. The inner edge must also be gently rounded. The special use of this vital piece, which we will call the "key," will be fully explained presently.

FIG. 6.—Then, in addition to these, there are three central bars to make. Like the other parts they are $\frac{1}{2}$ in. by $\frac{1}{2}$ in., but are each $4\frac{1}{2}$ ins. long, and are cut as shown in Fig. 6. The end projections (a) are $\frac{1}{2}$ in. long and the cut-away part is exactly half the depth of the wood. Two of the three pieces (X and Y in Fig. 7) are similar, but the slot (b) of the third one (Z) is only $\frac{1}{4}$ in. wide instead of $\frac{1}{2}$ in. As will be noticed, this $\frac{1}{4}$ in. slot is *not* in the centre, but corresponds with the right-hand half of the larger slots of X and Y.

In making these twenty-one pieces, what should be borne in mind is that the different parts fit closely into each other. Consequently the slots, in width, must be cut so as to grip the thickness of the wood; in depth they must be exactly half this thickness.

Fitting the Puzzle.

In fitting up the puzzle, the three central bars must first be joined, as those form the skeleton framework of the article. Fig. 8 shows them in position, but as it is a puzzle in itself as to how they can be got thus some explanation is necessary.

FIRST STAGE.—First take the bars X and Y (see Fig. 7) and arrange them as shown in Fig. 9. It is most important that the projections a of X face upwards, and that the projections a of Y face towards the centre. Then take the bar Z, and bring it flat into the slot of X. The little slot of Z, however, must remain *above* the slot of X. Then slide the bar Y along to the centre, so that the part lettered c slips into the little slot of bar Z.

This may seem confusing to read, but it is easy to follow when the pieces are in one's hand. The result of this rather clever arrangement is that the six arms of Fig. 8 are all exactly the same length, width and thickness. They are also arranged so that in each arm may be clasped one piece each of Figs. 2, 3 and 4. The three central arms may, of course, be set up in a different order, and here we have merely chosen the way that is the most simple to describe and illustrate.

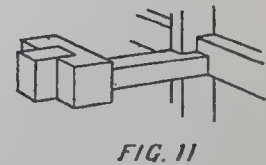
SECOND STAGE.—In the remaining part of the work the chief difficulty is to keep the puzzle from falling to pieces before the key finally locks it. Take the longer cross parts, Fig. 2, and clasp one to each arm. The six need not all be put on meanwhile, but only those which are most easily handled. The next size (Fig. 3) may then be put on.

In the ordinary course each arm could be completed with its three cross-pieces till the sixth was attempted, and here the reader would find that, at the last moment, his attempt was frustrated. He could not get the last small piece in, as other bars lock the puzzle. Here it is that the "key" comes in.

The Key Piece.

When the writer fits up the puzzle he finds that three of the arms may straight away be fitted complete with their three cross parts. These are the ones where the longer cross piece (Fig. 2) *ties flush with the back of the central bar* (see Fig. 10). This is easily found out when at work on the puzzle. In the case of the other three arms there is, of course, a gap caused by the long slots of the central bars. Adjust the parts on the first named three arms, and then deal with

The puzzle is a most interesting one to make, and affords endless amusement in fitting up.



		Ft.	In.	In.	In.
A	2 uprights ..	4	6 x	3	x
	2 caps ..		x	1	x
B	1 top rail (shaped) ..	3	0 x	4	x.
C	1 rail ..	3	0 x	4	x
D	1 rail ..	3	0 x	7	x
E	1 bottom rail ..	3	0 x	2	x
F	3 uprights ..	4	0 x	1	x
G	2 side top rails ..	10	1 x	2	x
H	2 uprights ..	4	0 x	1	x
I	2 uprights ..	3	3 x	1	x
J	2 rails ..		9 x	3	x
K	12 arches ..		3 x	3	x
L	2 rails ..	1	6 x	3	x
M	2 feet (shaped) ..	1	6 x	2	10 3 x
N	4 uprights ..	1	0 x	1	x
O	3 laths (dovetailed) ..	2	9 x	1	x
P	4 laths (dovetailed) slip ..	2	0 x	2	x or x or x
	1 apron piece ..	3	0 x	2	x
Q	1 apron piece ..	3	0 x	3	x
R	2 flower box fronts ..	3	0 x	9	x
	2 backs ..	3	0 x	9	x
	2 ends ..		9 x	9	x
	2 ends ..	1	6 x	0	x
	1 bottom ..	3	0 x	0	x
	1 bottom (if required)	3	0 x	1	6 x
	Mould (if required)	3	0 x	1	x

THE QUESTION BOX.

ILLUSTRATED REPLIES TO READERS' QUERIES.

QUESTIONS of general interest dealing with any branch of woodwork or handicraft will be answered in these pages. Readers, however, will kindly note:—(1) As the Editor may desire to reply by post a stamped addressed envelope (not a postcard) must in every case be enclosed. (2) No query can be dealt with unless name and full address of sender is enclosed. Names are not printed. (3) Questions will be answered as early as possible after receipt, but when sketches have to be prepared, or when research has to be made, a short interval must elapse. The insertion of Replies cannot be guaranteed, but Replies of general interest will be given when space permits.

NOTE—With each query must be sent a "Question Box" Coupon. (See page 3 of Cover). All queries to be addressed: Editor, WOODWORKER AND ART CRAFTSMAN, Sardinia House, Kingsway, London, W.C.

Dog Dresser.

[408] H. S. (Bradford) writes:—"I wish to make a dog dresser (for breeding small dogs) to stand under a window, indoors, about 3 ft. from floor. Size should be about 3 ft. long and 2 ft. deep, with two barred doors. I should like an upright central partition, with two sliding shelves."

REPLY.—We give a front elevation of an inside kennel or dog dresser. The left hand portion is shown without the door and indicates the method of carrying the shelves on wooden supports, which are firmly screwed to the outside and inside ends. The right hand portion shows the door, which is fitted with $\frac{1}{2}$ in. iron bars, spaced 2 ins. apart, and carried by good strong brass butt hinges. The bottom of dresser is fitted with sliding zinc or galvanised iron trays so as to facilitate



FIG. 1.—DOG DRESSER (No. 408).

cleaning. Front of the tray has a piece of timber fixed to it so as to give the appearance of a narrow drawer. The details at Fig. 2 show the method of construction. The 2 in. upright legs are framed together in such a manner that the $\frac{1}{2}$ in. matchboarding may be fixed on the outside and stand flush with the legs. Front and back bearers are partly dovetailed and partly screwed into the top rail and legs. Back bearer stands in $\frac{1}{2}$ in., and this allows for $\frac{1}{2}$ in. tongued and grooved matchboarding to be used for the back. Door frames are mortised and tenoned together. Two bottom bearers are used, and between these the tray slides in and out. A kicking strip and runner are shown above and below the tray, the former to prevent kicking up when tray is drawn out of its position, and to prevent the animals being injured on any sharp edges. The runners, which are mortised into the back and front bearers, support the tray and carry the weight. A separate tray is used for each half. Suitable wood is red deal or spruce. Finish by staining, and shellac spirit varnish to match the

surroundings of the room. Inside kennels are generally 18 ins. in width on the end and not 24 ins. as you state. The top proper is made from $\frac{3}{4}$ in.

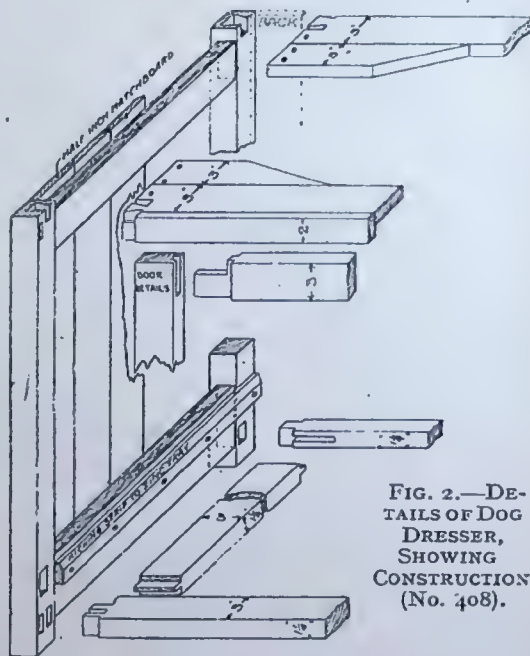


FIG. 2.—DETAILS OF DOG DRESSER, SHOWING CONSTRUCTION (No. 408).

timber and elevation and details are approximately to scale.

Ebonising a Walking Stick.

[409] J. C. (Hammersmith), writes:—"I have an old birch walking stick, white at present, which I wish to ebonise. Can you give me a simple method?"

REPLY.—Scrape off all the original polish and glasspaper smooth. Then give several coats of ebony stain in water size and French polish or varnish. Stephens' ebony stain is a good one, and the "Dolly" dyes are often used where small quantities are required. It would hardly be worth while making your own stain, but if you prefer to do this try the following:— $\frac{1}{2}$ oz. china blue, 1 oz. green copperas, $\frac{1}{2}$ lb. extract of logwood, $\frac{1}{2}$ oz. nut galls, 1 pint vinegar. Add 1 gill of a strip of steel filings or rusty nails in vinegar, after the former ingredients have been boiled till dissolved in an old iron pot. If the grain rises smooth down with No. 1 glasspaper, adding a rub of linseed oil. Or, after preparing the surface, you could paint the

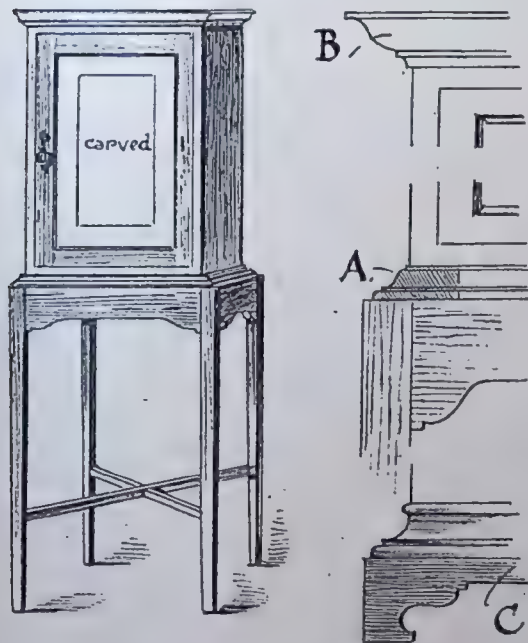
THE QUESTION BOX (Contd.)

stick (1) black, and (2) carriage enamel black, afterwards finishing with a couple of coats of white hard varnish and gas black mixed. The work should be done in a warm room free from dust. We have two excellent handbooks on polishing and staining, a small one at sixpence, and a larger one at one shilling. These may be had for 7d. or 1s. 2d. post free from our Publishing Offices.

Stand for Carved Cupboard.

[410] J. L. (Liverpool) writes:—"I enclose a sketch of mahogany cupboard with carved panel door. Could you suggest a suitable stand for this? Size of cupboard is 12 ins. by 6 ins., and 18 ins. high."

REPLY.—You do not state whether you require the cupboard to stand on a table or on the floor. If the latter, as the cupboard is of light make, we think you could not do much better than proceed as shown, which would give prominence to your work. The stand would not require to be much more than 24 ins. high, with a width of 15 ins. in front and depth of 9 ins.; that is to say, the stand should project a matter of 1½ in. front, back and sides. The legs should finish 1½ in. by 1½ in., tapered to ¾ in. by ¾ in. The rails, either straight or shaped as shown, finish 3 ins. wide at ends and 2½ ins. in centre by ¾ in. thick. They are tenoned or dowelled to legs and blocked behind. The mitred base mould (A) above this will be a great



STAND FOR CARVED CUPBOARD (No. 410).

improvement to the cabinet. It can be of ¾ in. or 7⁄8 in. stuff net, moulded to project 1½ in. beyond cabinet. The lower cross stretchers can be ½ in. or 5⁄8 in. by 7⁄8 in. wide, halved together and notched or dowelled into the legs, with a fine screw carefully

entered from the underside through into the legs. A top to the cabinet (B) would add greatly to the finish. If you wish to stand the cabinet on a table we should suggest a base similar to that sketched at C, the mould being mitred up and the shaped feet mitred and glue-blocked in the angles and afterwards glued to the mould. Height of base may be 2½ ins.

Reading Stand.

[411] E. W. S. (Lincoln) writes:—"Will you be good enough to give me some idea of how to make a table reading stand for holding large sized volumes?"



FIG. 1.—READING STAND, FRONT VIEW (No. 411).

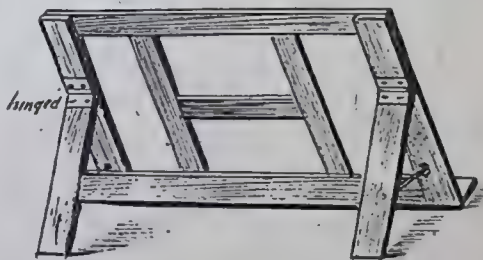


FIG. 2.—READING STAND, BACK VIEW (No. 411).

REPLY.—We give a couple of rough sketches of a suitable reading stand for your purpose, Fig. 1 giving a front view, open, and Fig. 2 showing the strut arrangement. Outer framework can be of 1½ in. by 1½ in. or ¾ in. hardwood, walnut, mahogany or oak, or birch stained. The inner framework can be of 1 in. by ¾ in. stuff, halved together and stubbed into the outer framing, which will be neatly mortised and tenoned together and pinned. The fillet on the lower part of the framework is glued and screwed in position with small brass screws, and has a couple of brass swivel holders (purchasable at most music dealers) screwed into the edge. The supporting strut is in five pieces of similar stuff to the framework. The upper part of the uprights is glued in position; the lower part is mortised together (or halved and screwed), and upper and lower parts connected by suitable hinges so that the whole thing can fold flat.

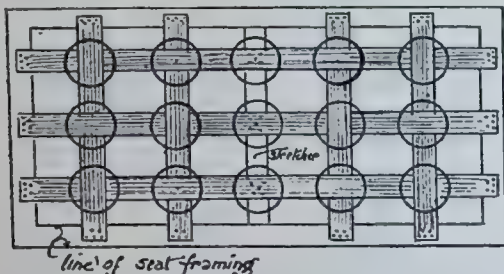
Upholstering Box Ottoman.

[412] H. C. (Stoke Newington) is making a box ottoman and desires some information regarding the upholstering of the seat.

REPLY.—The sketch we give shows the box lid with centre stretcher, also cross-webbed to receive the

THE QUESTION BOX (Contd.).

springs, of which twelve, fifteen or eighteen may be used. The material referred to for stuffing is known as Algerian fibre, and you would require about a dozen pounds of it at least. The cost may vary, but it will probably be under 3d. per lb. There is a superior quality of fibre, much more springy, at about 6d. per lb., but ordinary fibre should suit your purpose. The springs should be tied down to about two-thirds



UPHOLSTERING A BOX OTTOMAN (No. 412).

their length, keeping them as level as possible. Cover with hessian, stuff with fibre and rag flock, then cover with serym or hessian, and overlay with wadding or wool flock, giving the seat a rise in the centre. Materials can be procured from S. W. Hickman, 35, Grafton Street, London, W., and our handbook on "Upholstery" (7d. post free from our Publishing Offices) should be of great assistance to you.

An Overmantel.

[413] D. D. (Hartlepool) writes:—"I enclose a

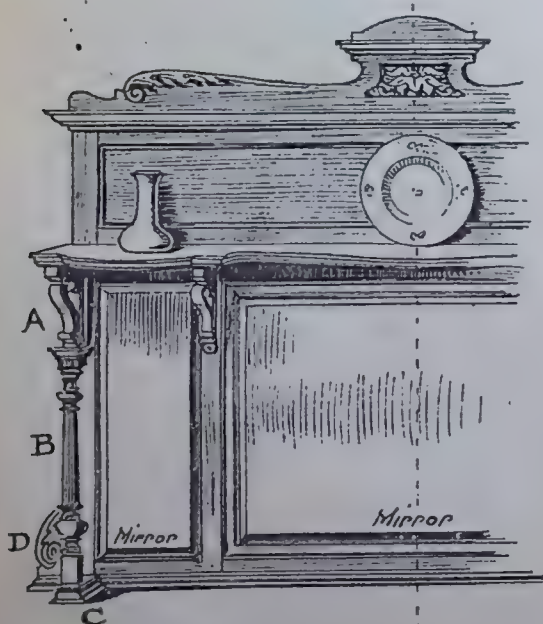
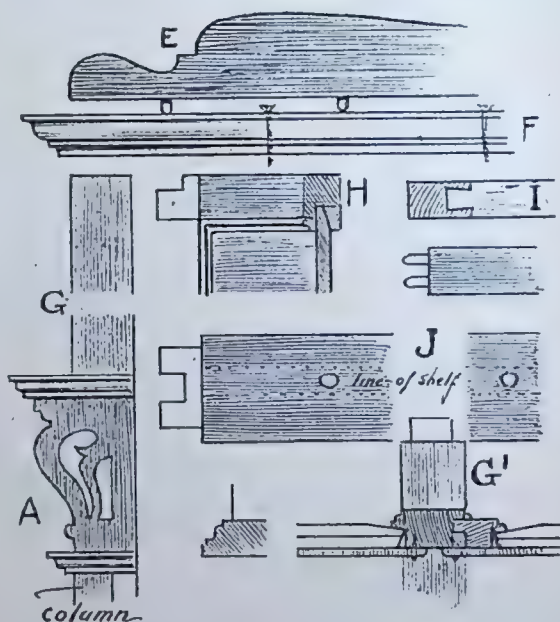


FIG. 1.—SKETCH OF OVERMANTEL (No. 413).

sketch of overmantel I am about to make, and should be grateful for a few working details and suggestions for any improvements. Would the turned columns as sketch look well?"

REPLY.—It would improve your design to fit the columns referred to. The shelf might be given an outline as shown, either plain or moulded as preferred. The supporting brackets (A) can be about 5 ins. by 3½ ins. by ¾ in., shaped and fretcut as indicated. These can rest upon slips of ¾ in. mould doweled to the back framing and forming also a capping for the columns. Column (B) can be about 1½ in. and would be improved if the shaft is reeded or fluted. The base projection or toes (C) upon which they finish can be ¾ in. to 1½ in. thick, and are mitred into the base mould of the main framing and screwed. The end brackets (D)



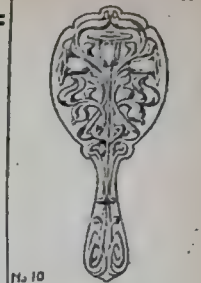
OVERMANTEL DETAILS (No. 413).

can also be fitted if your mantelshelf can take them. These can be 3 ins. to 4½ ins. wide by ¾ in. thick, doweled to the uprights and screwed to base mould. In putting the main framing together the pediment (E) can be of ¾ in. stuff by 6 ins. high, shaped and with ¾ in. moulded capping. It is doweled to the cornice mould (F) which may be 1½ in. high by 2½ ins., screwed to the rails below. The uprights (G) are 1½ in. wide by 1 in. The top rail (H), 1½ in. or 1½ in. wide, can be doweled or tenoned, or dovetailed into the uprights at back (see I) and screwed. The upper wood panelling, ¾ in. thick, is beaded in from the back, and can have a small mould; or the panel may be bevelled. The inner stiles, 1½ in. wide, are tenoned into position. The rail, to which the shelf will be screwed, can be 4½ ins. wide by 1 in., doweled or tenoned to uprights, or you could dovetail it in and screw. The bottom rail of framing can be 1½ in. or 1½ in. wide by 1 in. thick (¾ in. net).



PRACTICAL DESIGNS.

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highest merit, but in addition to this they are all thoroughly practical, clear working details being given. There are many comparatively new readers of **THE WOODWORKER** who have not yet seen these Designs. Every day requests reach us from all parts of the country for Designs similar to those in the lists given below. In view of this we have decided to offer, for a few weeks, the complete Series at **Less than Half Price**. For the convenience of workers we have arranged these in Six Sets, each containing either Six or Eight Sheets. (In Sets 1, 2 and 3 many of the Sheets are of extra size, each including several Designs.)

The actual price of the Designs is from 3/- to 4/- per Set—or One Guinea for the whole Series. To stimulate interest in woodcraft, however, we will during the present month send any One Set post free to any address for 1/8. Two Sets may be had for 3/3; Three Sets for 4/9; Four sets for 6/3; Five Sets for 7/6; or the Complete Guinea Series for 8/6 post free. As we have only a small stock of some of the Designs Orders should therefore be sent at once for the particular Sets desired. Sets cannot of course be divided; Single Sheets may be had for Sixpence each, post free. Many Sheets include more than one Design.

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Repoussé Salver, 13" diam.
- 6.—Carved Mirror, 17½" x 12".
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3 Repoussé Trays, 9", 7" and 5" diam.

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- 7.—Carved Wall Pocket, 15½" x 12½".
Wood Bedstead, 3' 6" wide x 4' 6" high.
Metal Fretwork Tray.
- 8.—Decorative Fretwork Arch, 5' x 22".
Carved Key Rack, 9½" x 8½".
Inlaid Pipe Rack, 12½" x 9".
Metalwork Hinge and Escutcheon.
- 9.—Louis XV. Curio Table (Carved) 2' 10" x 1' 8"
x 2' 5" high.
Two Miniature Fretwork Frames.
- 10.—Carved Hand Mirror, 13".
Carved Thermometer, 13".
Chip Carved Clock Case, 8½".
Inlaid (or Overlay) Hand Mirror, 15½"
- 11.—Carved Pedestal Writing Table, 4' 6".
Carved Hand Mirror, 12½".
- 12.—Chip Carved Card Box, 9" x 5½".
Fretted Lamp Bracket, 17½" x 12".
Carved Pipe Rack, 15" x 5".

SET NO. 3.—1s. 8d. POST FREE.

- 13.—Carved Photo Frame, 13" x 9½".
Overlayed Bookshelves, 22½" x 20".
Carved Finger Plates, 12" and 8".
- 14.—Dutch Extension Table, 5' x 4'
over top.
Carved Wall Mirror, 12½" x 10½".
Carved Brush Rack, 14½" x 5½".
Inlaid Bracket, 16" x 4½".
- 15.—Carved Gothic Frame, 16½" x 13½".
Inlaid Japanese Vase, 12½" x 4½".
- 16.—Carved Elizabethan Bracket, 12½"
x 12½".
- 17.—Lady's Inlaid Workbox, 13" x 9½"
x 6½".
- 18.—Carved (or Plain) Occasional Table,
21" x 15½" x 2' 5" high.

SET NO. 4.—1s. 8d. POST FREE.

- 19.—Two Carved Frames, 15½" x 7½".
Inlaid Thermometer, 16" x 4½".
- 20.—Carved Overdoor, 3' 9" x 13".
- 21.—Carved Hall Mirror, 36" x 24".
- 22.—Inlaid Timepiece, 18½" x 10½".
- 23.—Inlaid Table Top, 23½" x 14".
- 24.—Two Carved Fruit Panels, each
21" x 8".
- 25.—Carved Table Top, 20" diam.
- 26.—Carved Frame, 19½" x 15½".

SET NO. 5.—1s. 8d. POST FREE.

- 27.—Chip Carved Table Top or Tray,
21" x 15".
- 28.—Carved Stool, 20" x 12½" x 19" high.
- 29.—Carved Frame, with Shelf, 38" x 24½".
- 30.—Carved Thermometer Bracket, 20½"
x 10½".
Carved Corner Bracket, 14½" x 8½".
- 31.—Carved Umbrella Stand, 33" x 27½".
- 32.—Table with Inlaid Top, 15" x 15"
over top.
- 33.—Carved Panel (upright or oblong),
14" x 8½".
Bent Ironwork Casket, 12½" x 6½"
x 7½".
- 34.—Fretted Brackets, etc., for Decoration
(6 Designs).

SET NO. 6.—1s. 8d. POST FREE.

- 35.—Inlaid Overmantel, 4' x 23".
- 36.—Carved Hall Shelf, 27" x 20½".
- 37.—Carved Panel, 23½" x 7".
Inlaid Panel, 23½" x 7".
- 38.—Carved Smoking Table, 28" x 15½"
square.
- 39.—Inlaid Table Top, 16½" x 16½".
- Wrought Gong Bracket, 16" x 7½".
Carved Bracket, 10½" x 7½".
- 40.—Carved Paper Knife, 16".
Pair Inlaid Finger Plates, 15" and 10".
Bent Ironwork Letter Rack, 9½" x 6½".
- 41.—Carved Frame, 33½" x 26½".
- 42.—Cabinet Bookcase, 4' x 2' 7".

EVANS BROS., LTD., Sardinia House, Kingsway, LONDON, W.C.



HOW TO DO IT.

PRACTICAL PARAGRAPHS ON EVERYDAY PROBLEMS.

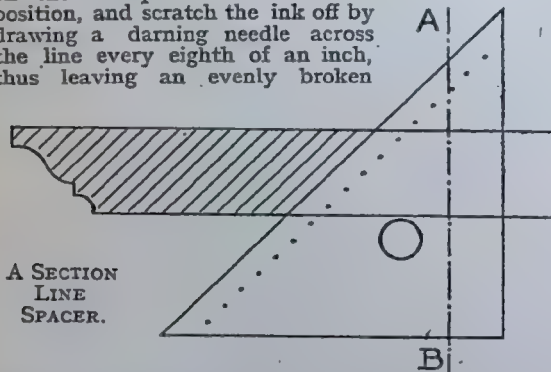
Half-a-Crown for Suggestions.

UNDER this title we shall be pleased to receive from readers short original suggestions (preferably illustrated), dealing with woodwork, metalwork, or any other handicraft. Interesting paragraphs dealing with every day problems or difficulties in practical work will have preference. A postal order for 2s. 6d. will be sent for each contribution published. Contributions, *which must be original*, should be marked "How to do it," and addressed:—EDITOR, "WOODWORKER AND ART CRAFTSMAN," Sardinia House, Kingsway, London, W.C.

Lining Sections of Working Drawings.

A mechanical drawing, otherwise neatly executed, is frequently marred by the uneven spacing of the section lines. A simple and inexpensive spacer is shown here. This consists of a line of dots along the base of a transparent celluloid set-square, which transforms it into a handy section-line spacer.

About $\frac{1}{8}$ inch apart is a convenient space for these dots. In setting out the dots draw an ink line on the set-square at the desired position, and scratch the ink off by drawing a darning needle across the line every eighth of an inch, thus leaving an evenly broken



line; then, placing the needle point on each space, a light tap will leave a dot in the correct place, the ink afterwards being removed. The dots should be on the underside of the set-square to avoid shadows.

In using the device a vertical line (A B) is drawn, or a convenient line on the drawing itself may be used. As each dot comes over this line, a section-line is drawn. If the line over which the dots pass be drawn at an angle this will alter the spacing.

Hard Stopping for Wood.

For stopping up nail and screw holes, cracks and shakes, or blemishes of any kind, there is nothing so good as very fine sawdust (preferably from the same wood) mixed with glue and thoroughly worked in. Fish glue is better than the hot variety for this purpose, as it gives more time for manipulation; it is important, too, that plenty of sawdust be worked in, otherwise the stopping will consist of glue rather than of wood. If done carefully the stopping will be scarcely seen.

Faulty Locks.

When locks work badly, it is useless to oil the key, although this is the usual remedy. The lock should be removed from the door, taken apart carefully, each part cleaned, and the least possible drop of good machine oil put on the parts which work together. In the case of lever locks no oil whatever should be used; simply clean and brighten the parts and put together dry. Yale and similar locks are complicated affairs, and require as much care as a watch. No oil must be used in these or the delicate mechanism will become clogged and refuse to act.

To Divide a Room Quickly.

By placing a grooved fillet on the floor and a similar fillet on the ceiling, as in the drawing, and fitting match-boards in the grooves, it is easy to divide a room into two in a very short time. If only for temporary use, and if the boards are cut in fairly tight, the fillets may be dispensed with. If a doorway is wanted in the partition, a fillet (as A in the drawing) should be fixed along the opening. This will form the rebate for the door, and also fix the ends of the short boards.



Photography of Wood Without a Camera.

A simple and accurate way of obtaining photographs of the grains of different kinds of wood without the use of a camera is to place a very thin slice of wood in an ordinary printing frame, insert a piece of photographic paper, and proceed in the ordinary manner of printing from negatives. The print thus obtained, however, is a negative instead of a positive, the pores of the wood showing as black spots and the dense fibres as white areas. It is therefore necessary to print from this negative to obtain a photograph that shows the wood as it appears to the eye.

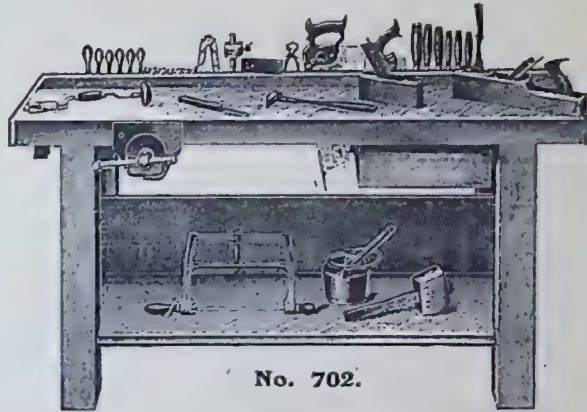
About Buying Wood.

Many beginners purchase the stuff for their work already cut to size and cleaned up, a method that may be convenient, but is neither thorough nor economical. Generally speaking it is more advantageous to purchase 9 inch boards and cut off what is required rather than order stuff of lesser width when specially required. The pieces cut off will be charged for even though the purchaser does not receive them. Cost is usually an important consideration to the amateur, in which case it is worth while having a look round. At most wood yards, there are a lot of odd cuts that can be obtained at a clearing-out price, and a man who, beforehand, can fix in his mind the approximate lengths of stuff that will serve his purpose may often secure a remarkably good bargain.

CABINET MAKER'S BENCH WITH TOOLS COMPLETE,

Fitted with "Sudden Grip and Screw-all-the-way" Vice and Acme Bench Stop.

- 1 Jack Plane
- 1 C. S. Tenon Saw
- 1 Screwdriver, 6 in.
- 1 Rose Try Square, 4½ in.
- 1 Marking Gauge
- 1 No. 2 Hammer
- 1 Gimblet
- 1 Rule
- 1 Mallet
- 1 C. S. Firmer Chisel each ½, ¾, 1, 1½, 2, 2½, 3 in.
- 1 Spoke Shave, 2½ in.
- 1 Rose Try Square, 10½ in.
- 1 Washita Oilstone
- 1 pair Wing Compasses
- 1 Pin Bit
- 1 Oil Can
- 1 Try Plane, 2½ in.
- 1 Smooth Plane, 2½ in.



No. 702.

Bench, with Tray and Tool Rack at back and Drawer in front.

Length 5 feet. Price £2 1s., f.o.r.

- 1 Panel Saw, 24 in.
- 1 Bow Saw, 8 in.
- 1 C. S. Gouge, each ¾, 1, 1½ in.
- 1 Bevel, 10½ in.
- 1 Turncrew Slide Mortise Gauge
- 1 pair Pincers, 6 in.
- 1 Round File, 8 in.
- 1 Cork Rubber
- 1 Rabate Plane
- 1 set Centre Bits
- 1 Bir Brace, Adj. Chuck
- 1 Screwdriver Bit
- 1 Wood Countersink
- 1 Half Round Files, each and 10 in.
- 1 Square File, 8 in.
- 6 Bradawls

No. 702a. Above set of Tools Complete, £2 18s., f.o.r.

Bench and Tools Complete, £4 15s., f.o.r.

J. BUCK, 56, Holborn Viaduct, LONDON, E.C.

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Camden School of Art, Dalmeny Avenue, Camden Road, N.

Central School of Arts and Crafts, Southampton Row, W.C.

Hammersmith School of Arts and Crafts, Brooklyn Road, Lime Grove, W.

Paddington Technical Institute, Saltram Crescent, W.

Shoreditch Technical Institute, Pitfield Street, N.

Westminster Technical Institute, Vincent Square, S.W.

In most cases persons under 21 years of age, qualified for admission to the Schools or Institutes, and bona fide engaged in the trade, are admitted free.

Full prospectus may be obtained on application to the Secretaries of the respective institutions.

JAS. BIRD,

Deputy Clerk of the London County Council.

Education Offices, Victoria Embankment, W.C.

August, 1913.

THE WORSHIPFUL COMPANY OF CARPENTERS. AN EXHIBITION OF WORKS IN WOOD AND WOODCARVING

will be held in

CARPENTERS' HALL, LONDON WALL, LONDON,
from

June 8th to 20th, 1914.

Full particulars of the various Classes with list of Medals and Money Prizes offered may be obtained from the Clerk at the Hall.

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Oak. Walnut. Ebony.
Dark Oak. Rosewood. Green.
Mahogany. Sallowood. Grey.
Fumed Oak.

5d. PACKET makes a pint.

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Five 3d. packets .. " 1/-
5d. packet .. " .. 6d.
Three 5d. packets .. " 1/-

When ordering, say whether for use with spirit or water.

T. O. LINDSEY & CO., 17, Leather Lane, E.C.

ROBERT TURNER & SONS,

Certificated Teachers of Educational Handwork,

SHERWOOD STREET, SCARBORO'.

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ARTICLES TO ORDER.

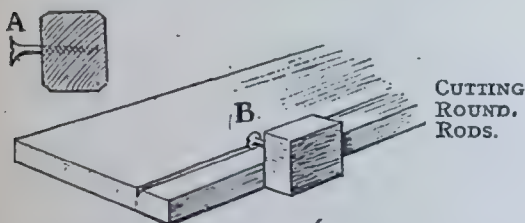
Special Carving Designs as required. 1d. Stamp for Particulars.

Always mention "The Woodworker" when writing to Advertisers.

HOW TO DO IT (Contd.).

Round Rods Without a Lathe.

When making a bird cage, plate-rack, or other article requiring the introduction of rounded sticks, a lot of work is often involved in getting these cut and finished to a size, should the worker not have access to a lathe. A quickly made little tool that will come in handy here is a cutter consisting of a large headed screw entered into a spare block of wood, as at A.



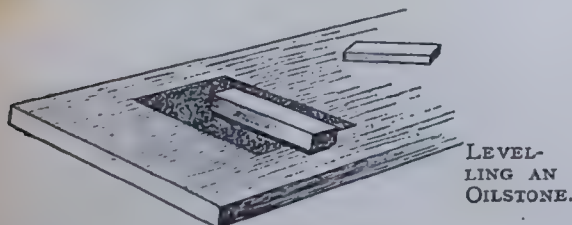
CUTTING
ROUND
RODS.

If the sticks are to be of, say, $\frac{3}{8}$ in. diameter, the screw-head should project fully to that extent from the block. Using the block as a fence, run the screw-head backwards and forwards along one side of the board (see B), so that it cuts deeply. Then turn the board over and run the cutter along the reverse side in the same way. The stick can then be broken off easily and the process repeated till the required number of sticks is cut. The angles can then be taken off with the plane, afterwards giving a light rub with a tube of glass paper.

Larger sized rods of about $\frac{1}{2}$ in. diameter will require to be sawn and afterwards planed up square, the corners then being taken off till the stick approaches roundness. If care be taken to cut the sticks square for their whole length the rest should prove easy.

Levelling an Oilstone.

It frequently happens that difficulty is experienced in sharpening cutting tools on an oilstone that has been in use for some length of time. This is generally owing to the surface becoming uneven in course of wear, and it is as well to remedy the matter at once.



Procure a sheet of coarse emery cloth and glue or tack it down to a spare board. Clean the stone with turpentine, wipe dry and then lay it face downwards on the emery cloth and work backwards and forwards with a planing action. The flat surface will soon be restored and give a satisfactory result.

Increasing Cutting Power of Oilstone.

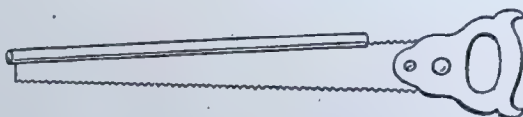
To increase the cutting powers of an oil stone, mix a small quantity of flour emery with the oil used on it. Only fine flour must be used; the ordinary kind is too coarse and will give a rough edge.

Using Up Pine Remainders.

When using up remainders of pine or work that has to be finished by painting, lengths of board are frequently put aside owing to defects of one kind or another. It is often possible, however, to patch up the wood sufficiently well to make it useful. For instance, the narrow crevices in the face of a board from which the resin has exuded can be scraped fairly clean with the blade of a penknife, and a mixture of sawdust from the wood in use and thin glue pressed in while the glue is hot; or whitening may be used instead of sawdust. Knot holes can be filled up in the same way, with or without a wood plug according to the size and shape of the hole. If the knots are saved they can be glued back into position and any faults filled with the stopping. Should a narrow crack or shake extend a foot or so from the end of the board, this may be sprung open so that a filling of thin hot glue can be poured in, allowing the board to close up immediately after and stand aside to set.

A Pruning-Saw Guard.

The double-edged pruning saw, with coarse teeth on one side and fine on the other, would be far more widely used if it were not for the fact that the unused edge so often injures the bark of the trunk when the



GUARDING A PRUNING SAW.

saw is being used. A very satisfactory guard may be quickly made of a brass curtain rod by prying it apart slightly at the seam and cutting a suitable length to fit over the edge, as shown in the sketch. This will cling to the saw-blade by its own tension.

Plugging a Screw Hole.

When a screw refuses to hold, and it is impossible to insert a longer or a stouter one, the hole should be filled up with a plug of wood, glued in. When this is dry the screw will be found to hold tightly.

Little Reminders About Glue.

It is a mistake to think that a slack-fitting joint can be made strong by putting it together with plenty of glue. In jointing up or repairing parts it is essential to remember that the wood must be brought together as closely as possible, and that the glue must be thin and as little of it left in the joint as possible. Only as much glue as will suffice for the work in hand should be made at a time, and when applied liberally the parts should be rubbed together to press out the glue before cramping up. Glue should be kept in a dry place. If allowed to lie for long where dampness is present it will go mouldy. Select a large glue pot at the start, to avoid having to continuously boil up the contents, and before using the glue break it up into small pieces and soak overnight. Any excess that presses out from a glueing can, when set, be removed with a plane or chisel.

How I Made £5,000 in Two Years with £2 to Start.

With Two Pounds and an Idea I made a profit of £5,000 in two years in the mail order business. Let me start you in business for yourself. I tell you what to do and how to do it. Don't be a wage slave. Get out of the rut. Get grit. Get backbone. Wake up and start now. I will send you my book, "Money-Making Opportunities in the Mail Order Business," free. It tells how you can start a business at home during spare time, while otherwise employed. It is a quick, certain way to a big income. Simply send me your name and address and a 1d. stamp. Address: HUGH MCKEAN, Suite 581 No. 260 Westminster Bridge Road, London, S.E.



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Required Principal, fully qualified to instruct Evening Classes in Technology and Science. To combine supervision and instruction of woodwork classes at Board's day schools in town and suburbs. Salary, £350. Apply early, with particulars, age, statement of certificates and qualifications, recent testimonials and references, and health certificate, to SECRETARY, SCHOOL BOARD, EAST LONDON, CAPE PROVINCE, SOUTH AFRICA.

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Most complete collection of Furniture, specially made for Carvers, etc., and Church Furniture of

Absolutely the best value.

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MODEL MOTOR SET.



Complete set of Underworks with Springs and Steering Gear. Comprising 4 rubber-tyred wheels, axles, brass caps and fittings, cranks and bracket with pedals, chain wheels, beat chain, back and front springs, steering gear, with hard wood hand rim complete. Splendid present for boy or girl; smart, ingenious, practical—not a rubbishy toy. Price Lists Free.—(Dept. H H), South London Wheelworks (Est. 1860), 63, New Kent Road, S.E. Phone Hop. 2329.

Now Ready—Diagram with full details and figures for making Model Motor Car for a Child—posted free for 6 stamps: address as above.

Forthcoming Exhibitions.

We shall be glad if Secretaries will kindly send us early intimation of forthcoming Exhibitions.

Open till Sept. 13.—Moray Arts and Crafts Society's Exhibition, to be held in the Public Library Buildings, Elgin. Secretary, Mr. J. B. Gill, Grant Lodge, Elgin.

Sept. 27 to Oct. 3.—Ecclesiastical and Educational Art Exhibition, to be held in "The Marlands," Southampton. Secretary, Mr. J. J. Adam, Maltravers House, Arundel Street Strand, London, W.C.

Oct. 3 and 4.—Ipswich Arts and Crafts Exhibition, to be held in the Art Gallery.

Oct. 4.—Manchester and District N.F.A. Exhibition of Fretwork, to be held at 53, Shudehill, Manchester. Secretary, Mr. W. Middleton, 12, Walter Street, Moss Side, Manchester.

Oct. 13 to 18.—Sunderland Arts and Crafts Association Exhibition, to be held at the Victoria Hall, Sunderland. Secretary, Mrs. Gordon Bell, St. Bede's, Sunderland.

Oct. 16 to 30.—Luton, Dunstable and South Beds Fine Art and Crafts Society's Exhibition, to be held at The Galleries, Plait Hall, Luton. Secretaries, Messrs. H. and W. Blundell, Cheapside, Luton.

Oct. 25 to 30.—Beckenham Arts and Crafts Society's Exhibition, to be held at the Public Hall, Beckenham. Secretary, Mr. Frank Fletcher, 25, Albemarle Road, Beckenham, Kent.

Oct. 30 to Nov. 6.—Tunbridge Wells Arts and Crafts Exhibition. Secretary, Miss Hodgkinson, Flat House, Tunbridge Wells

Nov. 5 to 15.—"The Englishwoman" Exhibition of Arts and Handicrafts, to be held in the Maddox Street Galleries, 23A, Maddox Street, Regent Street, London, W. Secretary, "The Englishwoman," 11, Haymarket, London, S.W.

Nov. 11 and 12.—Croydon Hobbies Exhibition, to be held in the Public Halls, George Street, and Wellesley Road, Croydon. Secretary, Miss Cooper, 10, Dingwall Road, Croydon, Surrey.

Nov. 14.—Teignmouth Amateur Guild of Handicraft Exhibition, to be held at St. Michael's Church House, Teignmouth. Secretary, Miss Pier-son, Furzleigh, Teignmouth.

Nov. 24 to 26.—Exhibition of the Gentlemen's Guild of Handicrafts, to be held at The Compton Hotel, Liverpool. Secretary, Miss Thomson, 3, Edward Street, Bath.

Dec. 2 to 5.—Worthing Arts and Crafts Exhibition, to be held in The Bedford Hall, Worthing. Secretary, Mr. C. B. Wickham, St. Cross, Valencia Road, W. Worthing.

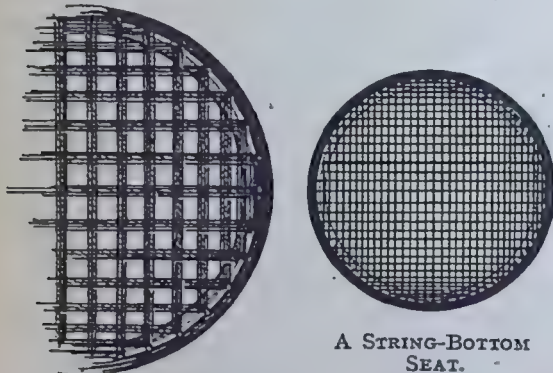
In applying to Secretaries for schedules and particulars, a penny stamp should be enclosed for postage.

Always mention "The Woodworker" when writing to Advertisers.

HOW TO DO IT (Contd.).

A String-Bottom Seat.

When the cane seat of a bent wood chair comes to grief and there is no immediate means of having it recaned, a serviceable seat may be achieved at the expense of a ball of string and a little patience. Cut away the cane and leave the holes clear. Then pass the string down through one of the holes and knot on the underside. Cut off a convenient length to handle, and carrying the strand across the seat to the hole immediately opposite, pass through and pull taut. Pass a loop over the forefinger and thread up through the next hole. Slip the loop and, pulling taut across the seat, thread down to underside as before. Continue so that the strands are parallel across the seat, leaving no holes unthreaded.



A STRING-BOTTOM SEAT.

Afterwards thread across at right angles, under and over the first stringing, each strand being under when its neighbour is over. All ends should be knotted on the underside close up to seat frame. Strands may also be knotted diagonally if the holes are large enough to take them.

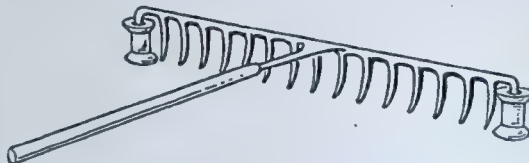
When the seat is complete damp the strings; any slackness will be taken up in course of drying, and the seat will form a comfortable and lasting one. A little beeswax may be brushed into the stringing, top and bottom, to prolong its life, and should the stringing sag at any time in course of wear it can be steamed with a kettle to tighten it.

Back Irons of Planes.

The back irons of trying, smoothing, or jack planes play a prominent part in the output of work, as they regulate the finish that can be given to the surface of a board. According to the distance that the back iron is set from the cutting edge the shaving will vary, finer and coarser. For instance a jack plane cuts deeply and gives a coarser shaving, owing to the relative position of the back iron, which is set farther back from the cutting edge in this plane than in either of the other two mentioned. The latter give a finer shaving and finish, owing to the back iron being set nearer to the cutting edge, with a correspondingly finer shaving from the shallower cut. Other planes such as the fillister, rebate, plough, &c., have their cutting irons set at a different angle and do not require a back iron for the particular kind of work for which they are used.

A Grass Rake.

This adaptation of an ordinary iron rake for use on a lawn was the outcome of not having a lawn rake at hand. Two spools, each $1\frac{1}{2}$ in. in diameter, are procured and one forced on each end tooth of the



A RAKE WHICH PROTECTS THE GRASS.

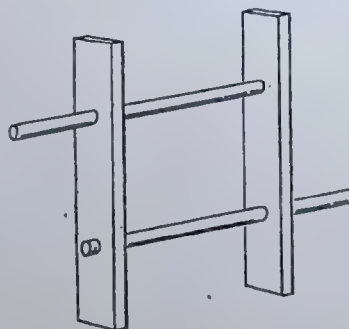
rake. The spools are forced on the teeth just far enough to allow the rake to slide on the ground and prevent the other teeth from digging out the grass. The end of the spools may be rounded and smoothed so that they will slide easily on the ground.

Removing Stubborn Screws.

To start a rusty or otherwise refractory screw, allow paraffin to soak in round it for a few hours, and then if it still refuses to budge hold a red hot poker on the head. If still a fixture, use the hammer and punch in the slotted head. Very few screws will withstand all of the above tests, but if they do then the only thing to do is to bore round it with an old shell bit, when the screw will come out as part of the core.

Home Made Clothes Line Reel.

It is much better to make a small reel, like the one shown, for a clothes line than to wind the line on the



CLOTHES LINE REEL.

arm, the usual method of getting it into shape for putting away. The reel consists of two strips of wood, 16 ins. long, 3 ins. wide and $\frac{1}{4}$ in. thick. These are joined together with two pieces of broom handle, allowing a space of 9 ins. between the sides and an extending handle of 5 ins. on opposite sides, as shown.

How to Save Old Barrels.

The following method will prevent water barrels from "going to staves" when they become dried out and the hoops loose. Procure some wire and bind it spirally around the barrel, fastening each alternate stave to the wire with a small staple. The wire will keep the hoops in place even when they are loose. This method is also applicable to wood tubs, buckets, casks, round washing machines, etc., and is more effective if the wire turns are run parallel for two or three courses at the ends.

PRACTICAL HANDBOOKS ON WOODCRAFT.

THE WOODWORKER SIXPENNY SERIES.

Thousands of readers of "The Woodworker" are adding daily to their incomes by means of their practical knowledge of woodworking methods. This knowledge has been gained largely through following the instructions offered in one or more of these Sixpenny Handbooks. Many readers have the complete Series, many others have a selection of the Volumes—always at hand for reference—which deal with the particular work in which they engage. Glance over the list. Are you ever in doubt as to a joint?—There is a Handbook to aid you. Have you difficulties in polishing?—We have two Handbooks, either of which will help you over all difficulties. Do you try Inlaying, Veneering, Carving, Turning, Upholstery? Do you attempt to make doors, stairs, windows? In whatever branch of woodcraft you are interested you will find directions in these Handbooks that will be of the greatest help to you. Remember, too, that all the books are written by experts; they are by practical men for practical workers.

PRACTICAL POLISHING.

The methods of staining and polishing Woodwork are clearly described, numerous recipes for fillers, stains, and finishes being given. Pp. 76, 7 illustrations. Price Sixpence. Post free 7d.

HOME UPHOLSTERY.

The methods of stuffing and covering various styles of Chairs and Settees clearly explained, with useful hints on repairing and renovating. One of the most serviceable handbooks ever issued. Pp. 86, 60 illustrations. Price Sixpence. Post free 7d.

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The Principles and Methods of Construction clearly described. The Handbook deals with Step-Ladders, Cottage Staircases, Sunk Landings, Bottom Winders, Middle Winders, Double Flights, Dog-Leg Stairs, Strings, Bullnose and Curtain Steps, and with Staircases with square well and sunk-panneled newels. Pp. 84, 119 illustrations. Price Sixpence. Post free 7d.

VENEERING AND INLAYING.

A practical instruction Book dealing with the art of decorating Woodwork by these methods. Subjects dealt with are—cutting, laying and joining of Veneers, curved work, cross-banding, stringing, inlaying, pearl, metal, etc., wax inlaying, parquetry, intarsia and marquetry. Pp. 79, 37 illustrations. Price Sixpence. Post free 7d.

DESIGN FOR WOODCARVERS.

An invaluable guide to the Carver who desires to add a knowledge of Design to skill in working. The book deals fully with the basis and elements of Design, with building up these elements, with low and high relief, with the application of the Principles of Design, with geometrical treatments, borders, spaces, and with aspects of symbolism and beauty. Pp. 86, 86 illustrations. Price Sixpence. Post free 7d.

WOOD TURNING.

Simple Lessons in, describing the Lathe and other Tools, and showing by means of graduated exercises how these are manipulated. A thoroughly practical guide to Lathe Work. Pp. 92, 99 illustrations. Price Sixpence. Post free 7d.

THE STANLEY UNIVERSAL PLANE.

How to Use It.—Describes fully how to set Fences, how to Bead, how to use as a Plough, Side and Sash Fillester, etc.; how to work Scotias, Ogee and other Mouldings, how to hollow and round, how to chamfer, how to use as a Dado Plane, how to form complex mouldings, etc. Pp. 80, 107 illustrations. Price Sixpence. Post free 7d.

FURNITURE HARDWOODS.

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HOW TO DO IT (Contd.).

Restoring Lines on an Old Rule.

Cover the surface of the rule thoroughly with blue chalk, then rub off the surplus. This will leave the division marks clear and distinct in a bright blue, and they will remain in this condition much longer than would be expected. A more permanent method is to paint the square with red lead and allow it to dry for five or six hours, then damp a soft cloth in kerosene and wipe off the surface coat. The paint will adhere in the marks and figures, thus making them visible.

Useful Matching Stain.

When adding an article of one's own construction to the furnishing of the home, some trouble is often experienced in matching up the old with the newer and lighter wood. Stains bought or home-made appear to have something wanting when applied in the usual way, and time is lost in experimenting. The trouble can generally be surmounted by using a solution of bichromate of potash. Procure a couple of pennyworth and put in a quart bottle, fill up with water and shake till dissolved. It will dry quickly, but if not sufficiently dark a second or third coat can be given.

How to Turn a Pipe without a Wrench.

As shown here, a piece of rope makes a good substitute for a pipe wrench. Double the rope as Fig. 1, with a loop *a* as indicated. Wind the loop twice round the pipe (Fig. 2) and pass an iron bar (*b*) through the loop with its end (*c*) against the pipe. Hold the end of the rope (*d*) tight and push the handle end of

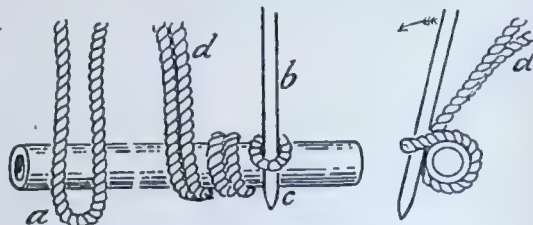


FIG. 1.

FIG. 2.

FIG. 3.

the bar in the direction shown by the arrow in Fig. 3. This tightens the rope and the pipe will turn in the direction the bar is pushed. By repeating the operation the pipe is unscrewed almost as easily as with a wrench, the pipe itself being neither crushed nor scratched.

PRIZE COMPETITIONS.

Ia.—Panelling Problem.

For the two best solutions to the following problem in panelling we offer prizes of FIVE SHILLINGS and HALF-A-CROWN each.

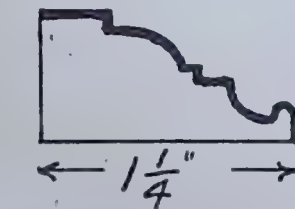
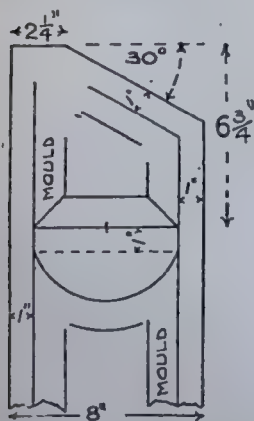


FIG. 1.—FRAME, WITH FULL-SIZE SECTION OF MOULDING.

The incomplete elevation here shows panelled framing, round the inside of which a moulding is to be glued and mitred. A full size section of moulding is also given. Draw, full size, a complete

elevation, showing all construction lines (inked drawings not required.) State what tools you would use for mitring the mouldings. Measurements not given are left to the judgment of the competitor. Name and full address of competitor must be written on the drawing.

Drawings, marked "Competition 1A," must be received on or before Monday, September 29th.

Address: The Editor, WOODWORKER AND ART CRAFTSMAN, Sardinia House, Kingsway, London, W.C.

Ib.—What Can be Made from Waste Wood.

In every house, or outhouse, there is lying about in some corner a piece of so-called "waste" wood—wood which may be quite sound, but for which there is no apparent use.

Suppose you have a piece of sound deal 23 ins. long, 11 ins. wide, and 1/2 in. thick, unplanned. In what way can the best use be made of this board with the minimum of labour and outlay?

For the two best suggestions prizes of FIVE SHILLINGS and HALF-A-CROWN each are offered.

Suggestions, which must be brief, should be accompanied by dimensioned sketches in pencil or ink. Name and full address of competitor must be written on MS. and sketch.

Suggestions, marked "Competition 1B," must be received on or before Monday, September 29th.

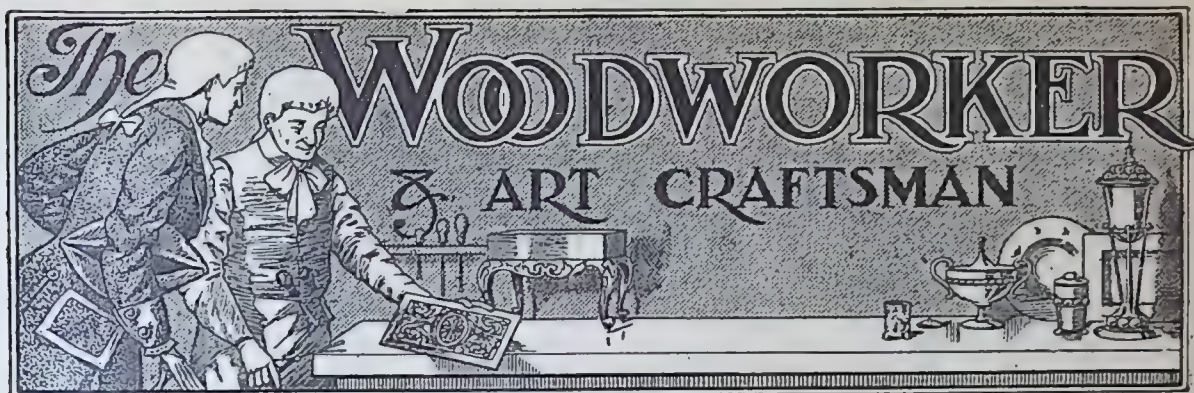
NOTE.—Any reader may, if he desires, enter for both competitions, but each competitor must cut out and enclose the COMPETITION COUPON (available for September only) on page 3 of Cover.

PUBLISHING NOTICES.

Subscriptions.—"The Woodworker and Art Craftsman," with Design Supplement, will be sent post free to any address in the Postal Union for 4s. per annum, payable in advance. Remittances should be made by postal order and addressed to the Publishers.

Designs.—"The Woodworker and Art Craftsman" Design Supplements may be had FREE with the current number of the Magazine for one month only. They are not given away with back numbers, but may be had separately, price Sixpence each.

Publishing Correspondence relating to sales of the Magazine, subscriptions, etc., to be addressed to the Publishers, Evans Bros. Ltd., Sardinia House, Kingsway, London, W.C. Telephone, Holborn 6443. Telegrams "Byronic, Estrand, London."



AUTUMN REPAIRS. OUTDOOR AND INDOOR.

THE season is now upon us when everything should be made smart and secure for the winter months, for if slight repairs are not attended to now they will develop into serious faults before spring arrives. It therefore behoves every one who enjoys the comfort of a home to look to it at once, and to see that all repairs, however slight, are attended to. In an article such as this, it is of course quite impossible to touch upon everything, but the actual points upon which we do dwell may possibly suggest others to those readers who are interested in the subject. The old proverb, "a stitch in time saves nine," applies in a very practical manner to our subject.

Spout Leakages.

One very common fault, and one which does not make itself apparent in many cases till it is too late to put it right properly, is leakage in spouting—or, more properly speaking, eaves-guttering. This should be put right during fine weather, or it will be difficult to get watertight joints, and it is a good plan to overhaul the whole of the joints rather than risk leaving a leaky one for the winter.

Where the guttering is of iron, the section of the joints will be as Fig. 1, and to make a leaking joint into a watertight one it is only necessary



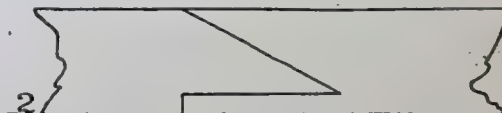
SECTION OF JOINT IN IRON GUTTER.

to unscrew the bolt, clean out the composition with which the joint is made, replace with new composition (a mixture of white and red lead, made very soft) and screw up the bolt gain. If the bolts are rusty they may break in getting out, but as the cost of new ones runs out at something less than one halfpenny each this is not an

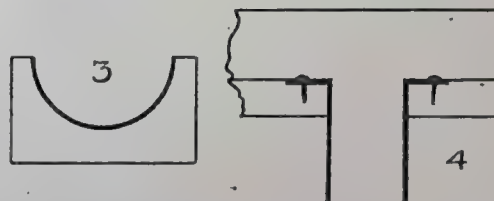
expensive item. After the new joints are made the whole of the guttering should be painted.

Wood Guttering.

In many parts of the country, wood guttering is used, and it is still more important that this be looked after in time. Wood guttering is made solid, and is put together with bird's mouth joints, as Fig. 2. It is at these joints that mischief



SECTION OF JOINT IN WOOD GUTTER.



WOOD GUTTER RE-PAIRED WITH LEAD.

DRAINING SOCKET.

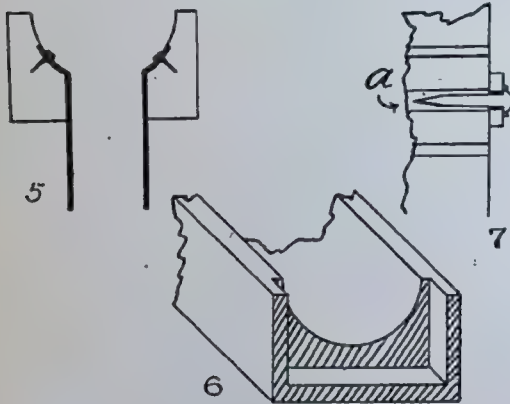
occurs. If not very badly decayed the joint may be covered with a thin piece of sheet lead, bedded in paint and well nailed with copper nails. A joint repaired in this way will appear in section as Fig. 3, the thick line representing the sheet lead.

Should the whole of the joints in a long length of wood guttering be faulty, then rather than do them as described above it will be better to take down the whole; and, cutting out the faulty joints, re-joint the lot, and make up at the end with a short length of new guttering. This will be found more satisfactory, and almost as cheap as covering the joints with lead.

AUTUMN REPAIRS (Contd.).

Wood gutters will sometimes be found faulty at the outlet into the down pipe, especially if this simply takes the form of an opening to allow the water to run out. The proper outlet consists of a lead socket, inserted as in Figs. 4 and 5. These are shown in both cross and lengthway sections, so that the correct shape of the socket may be seen.

The ends of wood gutters are fitted into recesses as Fig. 6, and they should always be well bedded in with thick paint; in fact, nothing in connection with these wood gutters should be put together without paint in the joints. Not only this, but all should be painted every year, in dry weather, and when the wood itself is quite dry.



5.—CROSS SECTION OF DRAINING SOCKET.
6.—WOOD GUTTER RECESSED TO TAKE END PIECE.
7.—SECTION SHOWING FIXING OF DOWN PIPE.

Before leaving the subject of gutters, we must call attention to the down-pipes, or rather to the fixing of them, which will in many cases be found temporary. If the nails are driven direct into the bricks, the latter will probably be split in doing so, and consequently it is only a question of time before the pipe will be unsafe. The proper thing to do in a case of this kind is to take down the pipe and drill holes in the bricks at the right spots to take the nails, filling the holes with wood plugs, preferably oak. There will then be no risk of the pipe falling on some head at an unexpected moment. A section of this is shown in Fig. 7, *a* being the wood plug.

Re-Pointing.

The pointing round window and door frames has a way of dropping out, leaving the way clear for the entrance of wet, and frequently wind. The pointing is often of cement mortar, and as such is not lasting; if made strong with cement it breaks away, while if too much sand is added it simply powders itself and is soon all gone. The

best material to use for pointing in places such as this is what is known in some parts as "mastic." This is composed largely of sharp sand, mixed with boiled linseed oil, to which is added sufficient red lead to give it a colour; this will be enough to make it set hard, and when used and once dry it never drops out—indeed, it is very difficult



8.—MASTIC POINTING
ROUND WINDOW FRAME.

9.—DRIP BOARD
ON OUTSIDE DOOR.

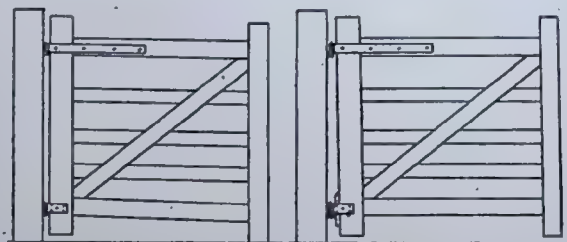
to remove. Fig. 8 shows the section of a window frame with the pointing in position; it should be worked well in as shown.

Drip Boards for Doors.

Outside doors are often troublesome on account of the wet running down them and into the room; this may be obviated by putting on a "drip board" as Fig. 9; this must be wide enough to overhang the sill as shown, and must have a groove on the under side to make the wet drip off. The best way to fix these boards is to screw them from the inside as indicated.

Gate Repairing.

Gates are a fruitful source of trouble, especially those which are made from unseasoned wood. The shrinkage, due to seasoning of the wood,



10.—GATE DROPPED
IN FRONT.

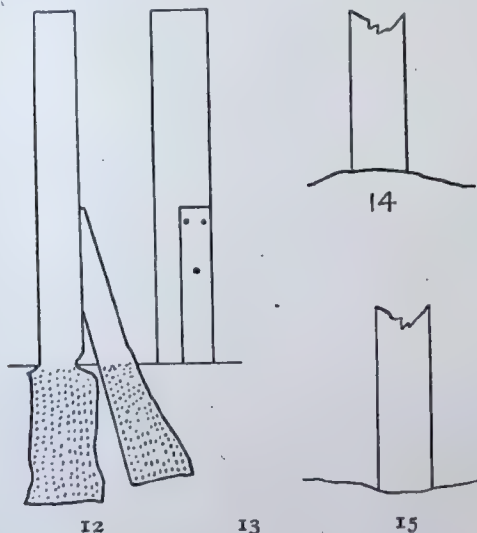
11.—GATE BLOCKED
AT BOTTOM HINGE.

allows the front of the gate to sink and drag on the ground as in Fig. 10. As a rule it is not practicable to force the gate back to the right shape again; the simpler way being to take off the bottom hinge, and place a block of wood behind it, thus throwing up the front of the gate and making it open freely again as in Fig. 11. Another way to attain the same result is to dig down at the back of the post, and force the latter back.

AUTUMN REPAIRS (Contd.).

Strengthening Fence Posts.

The weak points in connection with fences of every kind are usually the posts, and these are most often found in the tendency to decay at the surface of the ground. To strengthen such it is necessary to spur them, as shown in Fig. 12. The drawing is practically self-explanatory; the spur should come well up the post as shown, should fit well to it, and also be nailed firmly before it is rammed up. The earth should be loosened round the post so that it can be placed in the correct position; the spur will then keep it there.



12.—POST SPURRED. 13.—POST SPURRED AT ONE SIDE TO GIVE ROOM FOR GATE. 14.—POST SURROUNDED BY HIGH GROUND. 15.—LOW GROUND AT POST.

If the spur is to be fixed to a gate post, and the latter is hinged so as to shut between the posts, the spur must be placed as in Fig. 13, so that it will not interfere with the gate; but if there is no objection otherwise the spur should be as nearly as possible the same width as the post. In all cases the spur should be placed at that side of the post to which the latter has a tendency to lean.

Posts will always have the tendency to decay at the surface of the ground, or, as it is sometimes said, "between wind and water." This can be guarded against to a certain extent by keeping the ground close to the post higher than at other places, as in Fig. 14; if, as is usually the case, the ground at the post is low as in Fig. 15, it simply encourages decay, as the water will always gather round the post.

It may seem strange that the earth should

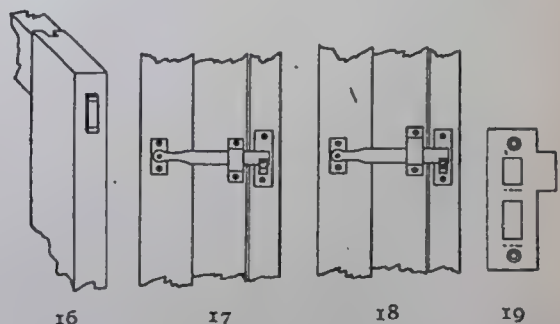
almost invariably be low just where it is wanted to lie up, but the reason is that the ramming up of the post is not done thoroughly, the consequence being that the earth gradually sinks.

Inside Door Troubles.

We may now transfer attention to the inside of the house, where one of the greatest bugbears is the projection of the tenons on the edges of the doors, as in Fig. 16. This is caused through shrinkage of the wood, and the remedy is obvious. Before, however, the ends of the tenons are planed off the wedges should be driven in, and if necessary extra ones inserted. It is possible that the joints of the door may be drawn apart; if so, they should be forced up before the re-wedging is done, even if this makes the door smaller and necessitates the nailing on of a strip of wood to bring it up to the proper width again. Should the latter expedient be necessary, the strip should be fixed on to the hinged side of the door, readjusting the hinges as may be required.

Latches and Locks.

The sinking of a door, even though only slightly, may cause trouble with the latch or lock. If the former, it will be as Fig. 17 when the door is closed; instead of the latch sliding up the catch smoothly, as it should do, it will strike on the end of the latter, thus breaking the keep or bending the latch. The remedy is to raise the



16
DOOR WITH
PROJECTING
TENONS.

17
LATCH WITH
KEEP TOO
LOW.

18
LATCH WITH
KEEP FIXED
CORRECTLY.

19
STRIKING
PLATE
OF LOCK.

keep, so that the latch will rest on the bottom of it, and be in a position to come on the slope of the catch when the door is closed, as in Fig. 18. Many latches are fixed wrongly in this respect.

When this difficulty is encountered in connection with lock, it is necessary to lower the staple; or, if a mortise lock, the striking plate (Fig. 19) must be removed, and the openings in it filed down, as shown by the dotted lines in the drawing.

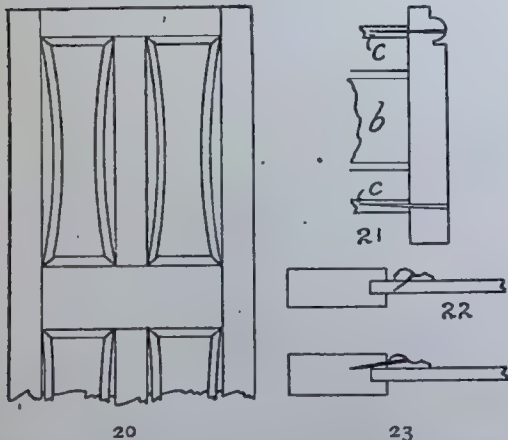
AUTUMN REPAIRS (Contd.).

The insertion of extra screws in hinges as required, or the easing of doors by planing, and similar small jobs should not be neglected.

Shrunk Door Panels.

Doors will be found with the mouldings away from the stiles, the panels having shrunk and carried the moulding with them, giving the door the appearance as shown (slightly exaggerated) in Fig. 20. The remedy for this state of things is to remove the whole of the moulding, carefully clean off the paint, putty, &c., which may adhere to it, and re-fix. In doing this, do not nail to the panel, as in Fig. 22 (as this is in a great measure the cause of the original trouble), but fix into the door framing, as in Fig. 23; this will hold the moulding, and at the same time allow the panel to shrink or swell.

Door frames inside the house are usually made as shown in section in Fig. 24, and if the stop (as the smaller piece is called) is only nailed down



20.—DOOR WITH SHRUNK PANELS. 21.—REFIXING SKIRTING. 22.—FAULTY NAILING OF MOULDING. 23.—MOULDING NAILED CORRECTLY.

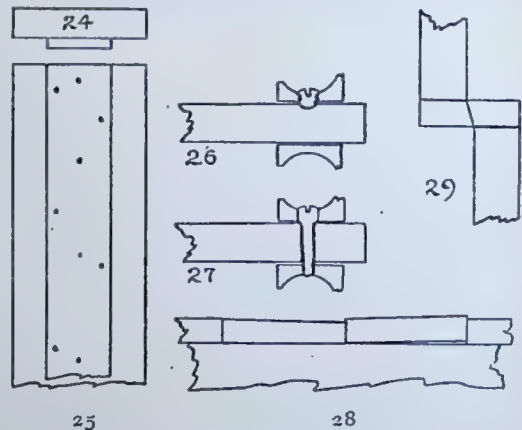
the middle by the jerry builder's method it becomes loose. The remedy is to nail down each side diagonally, as in Fig. 25. This applies to all fixing of narrow strips; fasten the outsides and the middle will fasten itself.

Loose Door Handles.

Loose door handles are caused through being fixed to the spindle with a short screw, as in Fig. 26. The most effective remedy is to discard the short screw entirely, and to substitute a screw reaching through the spindle, and also through the shank of the knob as well, as in Fig. 27. The hole in the spindle is tapped, and the screw threaded to fit.

Uneven Floors.

Uneven floors are caused by the boards being of unequal thickness, or through not bedding properly on the joists, both faults being shown in Fig. 28. The remedy in the one case is either to plane down the adjoining board, or to take up the thin board and block up underneath, the latter being the better plan. In the other case the board which stands up can usually be sent down into position by the use of the hammer and nails; or failing these screws may be used.



24.—BUILT-UP INSIDE POST. 25.—INCORRECT AND CORRECT WAYS OF NAILING ON STOP. 26.—FAULTY FIXING OF DOOR KNOB TO SPINDLE. 27.—STRONG METHOD OF FIXING KNOB. 28.—UNEVEN FLOORING. 29.—SECTION OF MEETING STILES OF WINDOW.

Loose Skirting.

Loose skirting is usually caused through faulty fixing. Often it is nailed to wood bricks in the first instance, and these latter are laid in mortar in the building; the block (brick) shrinks, and the mortar dries into powder and crumbles out, thus leaving the block loose, and the skirting can only follow suit. The best remedy is to remove the skirting entirely, discard the wood block, which will probably be found in about the position shown in Fig. 21, *b*, and then insert a series of wood plugs as *c*, some near the top and others near the bottom of the skirting.

Tight Windows.

Sticking windows can usually be remedied by looking to the tenons; if they rattle it is caused through the meeting rails (Fig. 29) being wider than the parting bead will bear, and instead of the latter being clipped tightly by the sashes when these are fastened the fastener simply pulls the two meeting rails together. The remedy is to reduce the width of the bevelled parts of the meeting rails until the two sashes, when fastened, will clip the bead tightly.

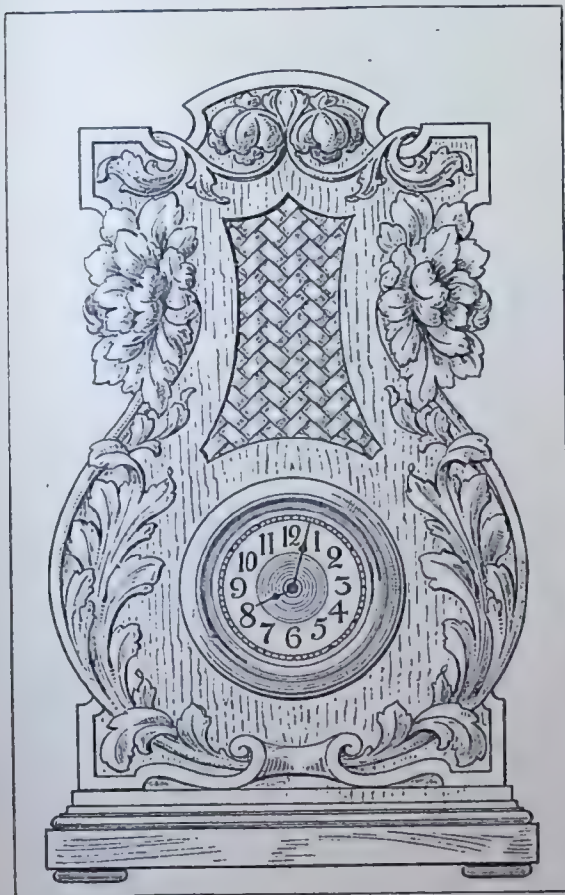
A RICHLY CARVED TIMEPIECE.

THE SUPPLEMENT DESIGN.

ON the Supplement which is given with this issue will be found two designs: one for a carved clock case, the other for a postcard photograph frame with fretted overlay.

Construction of Clock Case.

The carved clock case is $14\frac{1}{2}$ ins. high by $8\frac{1}{2}$ ins. wide, and is designed to hold a movement which is readily obtainable. The case consists of a



THE CARVED CLOCK CASE.

Size $14\frac{1}{2}$ ins. by $8\frac{1}{2}$ ins.

carved front, standing upon a solid base. A small built-up box, fitted on behind, holds the clock movement. Dark walnut is the best wood to use.

The construction of the case is the first consideration, as it is desirable to be clear as to the exact fitting of the movement before any

carving is done. The movement for which the case has been designed measures 4 ins. over the dial flange. The drum is $3\frac{1}{2}$ ins. in diameter, with a depth of 2 ins. between the flange and back. Thus a circular opening of $3\frac{1}{2}$ ins. diameter must be cut in the front to receive the drum, and as the clock is wound and regulated from behind a similar opening has to be cut in the back of the box. The depth, too, from the sunk face of the front to the outside back of box must be 2 ins. This is clearly shown on the full-sized design and also in the section Fig. 3.

Box Sides.—If the thickness of front at clock opening is $\frac{3}{8}$ in. the box sides may be $1\frac{1}{2}$ in. wide, 6 ins. high and $\frac{3}{8}$ in. thick. They are rebated for the back (see Fig. 4) and may be screwed to the upper base from below.

BACK.—The width over the sides may be 5 ins., but on account of the rebate the back will be only $4\frac{1}{2}$ ins. or $4\frac{3}{4}$ ins. wide. Like the sides it is 6 ins. high and $\frac{3}{8}$ in. thick, and must have a circular hole cut to correspond with that in the front. It also may be screwed to the upper base.

Box Top.—This may be plain, or with a moulded edge back and sides. If the latter, as shown, it may be $5\frac{1}{2}$ ins. by $1\frac{1}{2}$ in. As it bears no strain it may be glued to sides and back.

As it is proposed to screw the sides and back to the base, the whole box (that is, the edges of sides and top) may be glued to the back of the carved front, little glued blocks being fitted in the angles if thought necessary.

THE BASE is made up of two parts: the plinth, which may be $8\frac{1}{2}$ ins. by 4 ins. and $\frac{3}{4}$ in. thick, and the moulded upper base, which may finish rather less than $\frac{1}{2}$ in. thick. Four toes, $1\frac{1}{2}$ in. diameter and $\frac{1}{2}$ in. thick, are screwed on below. It will be noticed that the base projects about an inch beyond the back of the clock box; this is to give stability and to counteract any tendency on the part of the case to tilt forwards.

The Carved Front.

For this a piece of $\frac{3}{4}$ in. wood, $13\frac{1}{2}$ ins. by $8\frac{1}{2}$ ins. is required. It may be arranged to take the flat face down by $\frac{1}{4}$ in., thus giving the $\frac{3}{4}$ in. thickness at clock opening already referred to. The strapwork panel above the clock is necessarily taken down a little lower, but not more than about 1-16 in.

The sections on the full-sized design indicate the idea of relief. The highest points are the leaves that overlap and the flower centres. The outer border, seen only at the top and at the lower corners, should only rise about $\frac{1}{2}$ in. above the ground. Thus the thickness of wood at these parts will be $\frac{1}{2}$ in. At the foot, where the border meets in a cartouche the relief will rise, and the highest point of the volute may be the full thickness of wood.

CARVED CLOCK CASE (Contd.).

The sunk panel above the clock is intended to be almost flat. If deeply recessed the effect will be spoiled. A similar panel was illustrated and

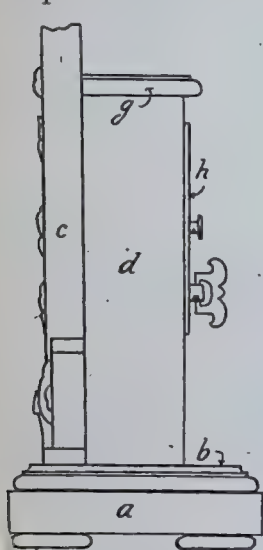


FIG. 2.—SIDE.

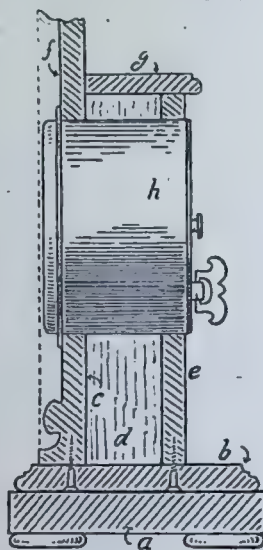


FIG. 3.—SECTION.

a, Plinth. b, Upper Base. c, Carved Front. d, Box Side. e, Box Back. f, Sunk face of Front. g, Box Top. h, Clock Movement.

described last month (page 243, Fig. 4) and most of the work may be done with the V tool.

Finish.

The carved front may be glued to the upper

base and screwed from below, this being done after the box parts have been fixed on behind. The clock movement is simply passed into the opening provided for it, the metal flange being screwed (with small round-headed brass screws) to the wood front.

If made in walnut the case may be oiled with raw linseed oil and turpentine; when dry it may

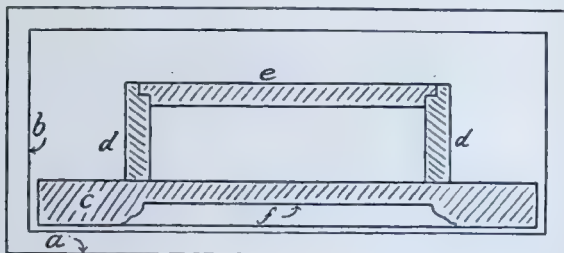


FIG. 4.—PLAN OF BASE, SHOWING CLOCK BOX.

a, Plinth. b, Upper Base. c, Carved Front. d, Box Sides. e, Box Back. f, Sunk Face of Front.

have two coats of white polish, and afterwards a brush with beeswax and turpentine. The final finish should of course be dull.

Clock Movements.

Clock movement, in polished brass case and with aluminium dial, size 4 ins., over flange and with drum $3\frac{1}{2}$ ins. by 2 ins. may be had post free for 4s. 9d. from EVANS BROS., LTD., Sardinia House, Kingsway, London, W.C.

OVERLAID OR INLAID FRAME.

Full-Sized Design on Supplement.

THE second design on the Supplement is for an overlaid or inlaid photograph frame, suitable for holding the favourite postcard size of print. The design is one for those who enjoy a bit of artistic fretsaw work, and the combination of appropriate materials, and careful cutting, should result in the production of a real work of art craft.

The Frame Overlaid.

THE BACKGROUND, 12 ins. by $8\frac{1}{2}$ ins., may be $\frac{1}{4}$ in. or 5-16 in. thick. It has no fretting, but a postcard opening ($5\frac{1}{2}$ ins. by $3\frac{1}{2}$ ins.) must be cut in the centre. A suitable wood is dark walnut, rosewood, ebonia, padouk, or oak if stained dark.

THE OVERLAYS may be cut in thin wood, xylonite or metal, and as these materials are described on another page of this issue it is unnecessary to deal with their respective merits here.

All things considered, ivory-white xylonite is perhaps the most suitable material to use, but aluminium or brass would also look well. The delicacy of the ornament renders wood less suitable, but of course the finished overlay will be strong when glued in position.

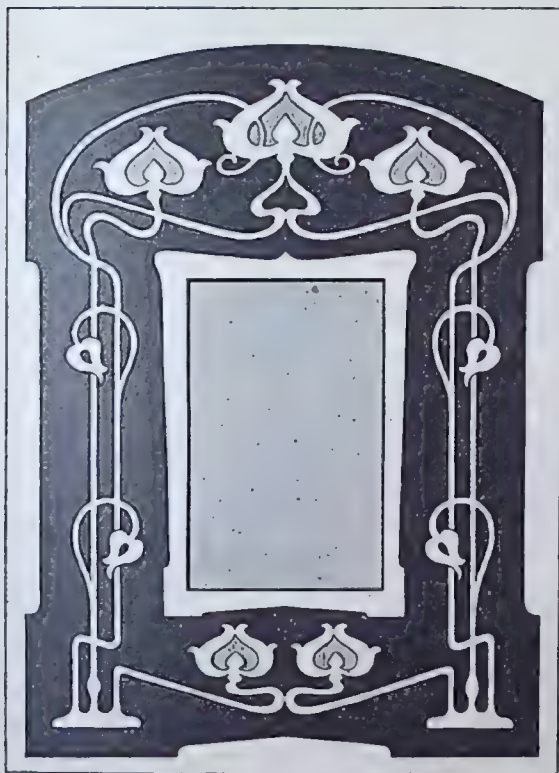
There are two separate overlays: the picture border, and the surrounding ornament. Both may be in the same material and of the same colour; this is largely a matter of taste, but if the floral parts of the overlay are underlaid—and this is recommended—it is unwise to introduce too much variety in colour.

The fretted overlay has to be cut with great care, everything depending on accuracy and evenness of line. There is a certain severity in the curves which is not at first apparent, but with moderately slow cutting no difficulty need be experienced. As the xylonite will be cut with a board of wood below there is no risk of its breaking.

PHOTOGRAPH FRAME (Contd.).

Metal, if used, will of course be sawn between two boards of wood.

UNDERLAYING.—In Fig. 5 the suggestion of underlaying is indicated by a tint. The effect of



[FIG. 5.—OVERLAID OR INLAID PHOTOGRAPH FRAME.

Size 12 ins. by 8½ ins.

the underlay is to emphasise the floral features by giving them a distinct inner background. The simplest method of underlaying is to glue a very thin piece of veneer behind the particular fret to be backed. A more workmanlike plan is to carefully gouge out a shallow bed in the background, and inlay either a piece of xylonite or metal, whichever is considered most suitable. In our article this month on Fretsaw Work other examples of underlaying will be found. A satinwood underlay looks well if the overlay is of white xylonite.

FITTING.—When the overlays are completed they are glued (or cemented) to the background, special precautions being taken to keep the ornamental part exactly in its right position. The border overlay slightly overlaps the picture opening, and thus provides a rebate for the glass, print, &c. These latter are slipped in from behind, and are held by a thin backboard of the same wood as the

ground. This, in turn, is secured with four small metal photograph clips. The strut should be hinged with two small brass butt hinges.

The Frame Inlaid.

If an inlaid frame is preferred, the work can be carried out either in the solid or with veneers. Or, as a third alternative, 1-16 in. overlay wood may be used for the inlaid panel, this afterwards being mounted on a solid 3-16 in. or ¼ in. board.

For inlaying the only adaptation of the design necessary is to see that the lines interlace properly. Only three colours are required: one for the stems, a second for the floral forms, and a third for the flower centres. A fourth colour may be used for the picture border, or this might, if desired, be overlaid.

If the border is inlaid there will be no rebate for the picture unless one is specially cut at the back. A simpler plan is to build a framework at the back by means of four narrow strips of wood (3-16 in. on ¼ in. thick) mitred at the corners. The glass and picture will lie within these. As the photograph will be deeply recessed, however, it is advisable in this case to chamfer the edges of the opening.

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No charge will be made for this book provided THE WOODWORKER is mentioned and 4d. in stamps sent to cover the actual cost of postage. If the catalogue is called for no postage charge will be made. Address your application to Messrs. J. Buck, 56, Holborn Viaduct, London, E.C. 66

Ronuk as a Polish.

At the Exhibition in connection with the seventeenth meeting of the International Congress of Medicine the Ronuk Company was awarded a gold medal for their sanitary polishes and appliances.

COMFORTABLE ROCKING CHAIRS.

MOST USEFUL IN THE HOME.

MOST of us develop some special liking for a particular chair in the home, as lending itself more to personal comfort than any other; and given a choice many would express preference for the roomy and restful "base rocker," as the most welcome for a few hours of leisure after the daily grind.

Wood and Dimensions.

THE WOOD suggested is oak, but beech, birch, walnut and mahogany are all suitable woods if preferred to match existing articles in the room.

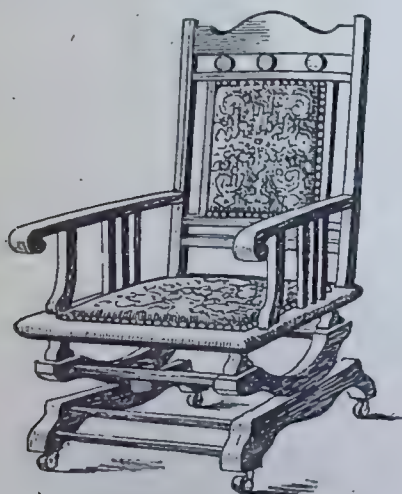


FIG. 1.—A "BASE ROCKER."

As shown, both seat and back are pin-stuffed, but these parts may be fitted with fibre or three-ply, or may be caned, as the worker decides.

With regard to dimensions these may vary, as a lady or gentleman of generous build will not find comfort in a chair that would meet the needs of a small person. The back, for instance, may be 18 ins. to 20 ins. wide and from 2 ft. 3 ins. to 2 ft. 8 ins. high; the depth of seat, again, anything between 18 ins. and 22 ins. deep.

As sketched the chair is 3 ft. 10 ins. high over all, allowing 15 ins. to 16 ins. for height of seat. The width of seat is 22 ins., and depth over all 21 ins. The width for the back is 19 ins. to 20 ins., and the height for the arms 10 ins. or 10½ ins. above the level of the seat.

The Parts.

BACK UPRIGHTS.—Starting with the back uprights, two pieces 2 ft. 9 ins. can be allowed, to finish 1½ in. on face and 1½ in. wide at lower end, where it enters the seat, tapering to 1½ in. at top. The face is shown plain, but could be finished with three scratched beads. The up-

rights will be mortised to receive tenons on rails and arms; they are also tenoned at the lower end to enter the seat. In cutting the latter allowance should be made for the pitch or slope of the back which may be 1½ in.

RAILS.—A piece 1 ft. 8 ins. (to include joints) will serve for the top rail B, Fig. 2. It can be of 1 in. stuff by 5 ins. wide, which will allow of the shaped outline being cut to finish 4½ ins. wide net. The rail C, of the same thickness, may finish 1½ in. wide, to be tenoned each end, mortised under for the pieces D to enter, and also rebated ½ inch for the back pad. The two lower rails E take (like C) pieces 1 ft. 8 ins. by ½ in. by 7 in. thick.

These rails are flat, as being easier for the worker to get out, and relying upon the upholstered back for comfort. Curved or sweep rails are, of course, an improvement both in appearance and comfort, and if these are preferred they can be cut at the local mill for a small sum out of stuff 1½ in. by 2 ins. or 2½ ins. according to the spring of the sweep.

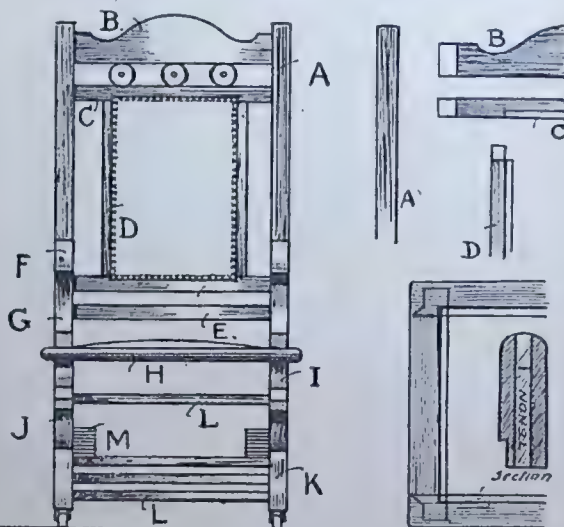


FIG. 2.—FRONT ELEVATION.

FIG. 3.—DETAILS.

THE UPRIGHTS (D) take two pieces 1 ft. 6 ins. by 1½ ins., and are tenoned each end and rebated like rail C for back pad. Thickness is 7 in.

ARM RESTS (F).—For these two pieces 1½ in. thick can be used. A full length of 1 ft. 9 ins. will include tenons, and a width of 3 ins. allows for cutting the finished curve and scroll 1½ in. and 2½ ins. wide respectively. Three mortises are cut in the undersides for arm supports G and slats N.

THE SUPPORTS (G) can be got out of a piece 11 ins., including tenons top and bottom, by 3 ins. wide,

ROCKING CHAIR (Contd.).

shaped from $1\frac{1}{2}$ in. wide at top to $2\frac{1}{2}$ ins. at seat, and finishing $1\frac{1}{2}$ in. thick. A stuffed pad, finished with brass nails, may be added to the arms.

THE SLATS (N) will take six pieces 11 ins. long, to finish $\frac{3}{4}$ in. wide by $\frac{1}{2}$ in. thick net. The three discs can be turned or fret cut to finish 2 ins. diameter by $\frac{1}{2}$ in. thick. If fretted the edges should be kept sharp and the face can be slightly curved. If cut in the lathe a few rings turned on the face would be an improvement, or they may be carved.

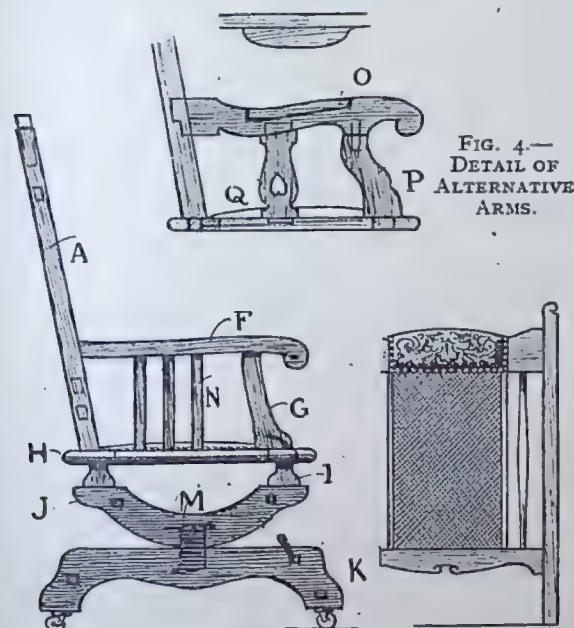


FIG. 4.—DETAIL OF ALTERNATIVE ARMS. FIG. 5.—SIDE ELEVATION. FIG. 6.—ALTERNATIVE BACK.

THE SEAT FRAMING may next be taken in hand. Front and back rails (H) finish 22 ins. long by 3 ins. wide by $1\frac{1}{2}$ in. thick, mortised for tenons on side rails (to enter well home) and rebated for upholstered seat. The seat plan with section is given at Fig. 3.

THE FOUR SUPPORTS (I) under seat can be cut from pieces 4 ins. long, including joints; they are shaped to $2\frac{1}{2}$ ins. wide by $1\frac{1}{2}$ in. thick and can be tenoned or dowelled into position.

THE ROCKERS (J) can be cut from a board to finish $1\frac{1}{2}$ in. thick by $5\frac{1}{2}$ ins. wide to the shape shown, the length over all being 1 ft. 10 ins. They should be mortised for two stretcher rails into each, and also for the supports I to enter. If desired the edges may be scratched to match the back uprights.

THE BASES (K) also finish about $5\frac{1}{2}$ ins. by $1\frac{1}{2}$ in., the length over all being 2 ft. 2 ins. The toe portions are finished square to receive a set of four brown bowl castors. They will require

to be mortised for three stretcher rails, the positions of which are indicated on the side elevation.

THE STRETCHER RAILS (L) can be planed up to finish $\frac{1}{2}$ in. square, or round, and will take five pieces 1 ft. 10 ins. long.

ROCKER SPRINGS.—The resistance to the swing of the rockers is obtained by fitting coiled springs to the inner sides of rockers and bases as indicated at M, the springs having flanged endsholed for screwing into position. These springs may be obtained through the large London stores such as Whiteley's or Harrods, or from W. Keen, chairmaker, Scrutton Street, City Road, London, E., or a specially good article is procurable from J. B. Brooks and Co., Ltd., of 1, Criterion Works, Birmingham. (THE WOODWORKER should be mentioned when ordering.) As there is not now an extended sale for these chairs it would be as well to order the springs beforehand. The cost should be about 1s. each.

Upholstering.

With regard to the upholstering the seat should be truly cross-webbed, about four lengths each way interlaced and tacked into the rebate, the ends being turned over and tacked again. A piece of serym or canvas can then be stretched over the webbing and tacked down. Over this can be layered black wadding and horse hair, covered down with calico or canvas, after which the final covering of tapestry, velours, plush or leather can be fixed with round-headed brass nails or banding and studs. A good wearing substitute for leather is pegamoid, which imitates it very closely and looks well.

In finishing the back this should be covered behind as the front, or the pad may be separately made and nailed into the rebate. THE WOODWORKER handbook on "Upholstery" (7d. post free from our Publishing Offices) gives all necessary information regarding this part of the work.

Alternative Suggestions (Figs. 4 and 5).

ALTERNATIVE ARMS.—If it is preferred to give a little more shape to the arms this may be done after the manner indicated at Fig. 4. The arms O can be got out of stuff to finish 1 in. or $1\frac{1}{2}$ in., and can be cut from pieces 3 ins. wide. These can be widened at the elbows by glueing to the shaped sides as indicated. The supports P can also be got out of pieces 3 ins. wide and should finish the same thickness as the arms. The panel Q can finish $\frac{3}{4}$ in. thick, out of a piece 4 ins. wide.

ALTERNATIVE BACK.—A word may be added concerning Fig. 6, which is indicated as with a caned panel back and with upholstered pad for the head. This back would be convenient at 2 ft. 3 ins. high, and is intended for those who find comfort in a chair which reaches to the base of the skull only.

A special cutting list of parts is not required, as all sizes are given in the text.

REPOUSSE WORK.

BELLOWS WITH BRASS AND COPPER DECORATION.

THERE is no place, perhaps, where the particular beauties of copper and brass repoussé work show to better advantage than near the hearth. In winter how brightly the fire light flashes on the polished surfaces, and in summer they bring life to a part of the room which would be cold and dead without them. As a welcome addition to the hearth, too, nothing can look better than repoussé-decorated bellows.

Bellows may be made, but it is better to buy a sound pair—not too cheap or too small, the toy type of article being of a slim character hardly worthy of the time spent in carrying out serious decoration. The solid, well-made old-fashioned pattern is the best.

The decoration is confined to the front, and consists of a panel attached by means of close-set small nails. As shown it is carried out in a combination of brass and copper, but if the other fittings are brass it might be better to use that metal alone. In either case the method of working is the same except that, instead of applying the metal in two parts, it could be cut in one piece out of a single sheet.

Draw on a piece of tracing paper the exact outline of the front, including the handle, but not the nozzle, and within this outline draw the design. It will probably be found best to make an enlargement by squaring out, and then make any slight alterations rendered necessary by the shape of the bellows used. Rub the metal over with a little turpentine to make the carbon paper bite; then transfer the pattern in the usual way by following the lines with a pencil or blunt knitting needle.

A good way of carrying out the repoussé is to work it over wax, this method being a half-way house between fixing on pitch and free working on a wooden ground. Its advantages are that a

medium degree of fineness is obtained, which allows of a bolder effect than the one, while admitting of more delicacy than the other. The wax used is ordinary red modelling wax, sold in sticks by artist's colourmen. If the weather is cold and it appears too hard, it may be kneaded up with a very little vaseline. In warm weather it will be soft enough after being worked up in the hand. Form it into a flat sheet, spread it on an unplanned piece of wood, and fix the copper down by means of screws. Only the lower part of the front should be worked on the copper, the upper or handle part being made of plain brass. Follow out the outlines with a medium tracer, keeping a firm and even line. Do not make the traced line which indicates the scales as strong as the rest, as this should ultimately be lost in the working.

When the outline is finished boss up the general shape of the dragon's body and wings. In doing this it must be noted that the wings must have a taut stretched appearance, and in order to get this effect the ribs must be kept at an even height so as to appear stiff and strong. The web should seem thin and be crisp-looking, not puffy or woolly. A very slight degree of raising will give the desired effect, and though it must not be flat the slopes and curves of the surfaces should be in accordance with the character of the substance represented. It is in dealing with little problems like this that one gets the full pleasure of any craft. When they are solved satisfactorily the superiority of

the work of the human hand (guided by a trained intelligence) over the most ingenious machine is proved. The body is easier to deal with, there being fewer subtle curves to represent, and for the first raising it will be enough if the general outline is kept true and bossed up so as to show the convolutions of



REPOUSSE COVERED BELLOWS.

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REPOUSSÉ BELLOWS (Contd.).

the tail. The head must also be raised and the claws indicated. The work should now be taken off the wax and turned over. Most of the wax will be easily scraped off with any smooth tool, taking particular care not too scratch the face of the work. Any little scraps that remain can be removed by warming the work and rubbing with a rag dipped in paraffin.

Fix the work on the wax again, the reverse way up, and go over all the outlines, sharpening them and correcting any detail which seems wrong. Then proceed a little further with the modelling by working down the hollows to the required level, and indicating some of the finer details. It will now probably be time to anneal the copper. Do this carefully so as not to mark or crack the metal. Carry on the work in this way from alternate sides

till finished, taking care not to confound a mere perfection of surface with the true finish, in which every touch has its definite meaning.

Cut the panel out to the requisite shape and drill small holes where the nails are to be; then clean it thoroughly after filing off any small roughness or irregularities. Colour it up to a dark shade and mount it on the bellows with small round-headed brass nails. Cut out the brass for the handle part to the shape shown, and clean and finish bright to afford a contrast with the copper. The copper should, however, be rubbed briskly to remove the tarnish from the parts in relief, merely leaving the sunken places dark. The chemical will remain in the tool marks, giving richness of colour to the whole. If the nozzle is not bright it should be cleaned and then polished and buffed. 29

FOR ART-LEATHER WORKERS.

Design for a Calf Skin Blotter.

BLOTTERS are favourite subjects with leather workers, and deservedly so, for they are not difficult to make and the material is calculated to stand the hard wear which is the lot of a writing

simple; it need not on that account, however, be avoided by the more expert worker.

Obtain a suitable piece of calf skin (not forgetting to allow sufficient margin to turn over in mounting), draw the pattern full size on a thin piece of paper, sponge the leather thoroughly with clear water, lay the design over it and follow the lines with a fine point, using sufficient pressure to mark them clearly. Cut the lines of the main pattern rather deeply; open them well, noting that the stems should be of even thickness all the way up; then rub up the parts requiring to be raised, this being done from the under side in the ordinary way, using a little filling. Before it dries mark in the veins, etc. The small rounds will not be much raised, but just tooled round and very slightly rubbed up, only emphasising the first and largest and letting the others die away to the smallest. Due regard must be paid throughout to the proper overlappings of the stems and leaves.

Punch the background evenly. It is a common fault with beginners not to be sufficiently careful about this, with the result that it gets stretched, and then it is most difficult to make it lie flat. The space in the centre is left plain as a contrast. It might be utilised for a monogram if desired, but the word "Blotter" should not be put in the middle. The use of the blotter is obvious, and a lettered title is unnecessary. If a monogram is used let it be fairly large and the letters of simple character. The design could, if desired, be coloured with stains, but if a good piece of leather has been chosen and the work is well finished, a little rich brown polish (afterwards rubbed off all raised surfaces) is preferable. Unless the worker is fairly expert it is wise to give out the mounting to a professional, as a nice piece of work is easily spoiled by incompetent finish.

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DESIGN FOR A SERVICEABLE BLOTTER

book in constant use. The design here should not over-tax the powers of the beginner as it is quite

MESSRS. CASSELL AND CO., LTD., are now issuing, each in 24 weekly parts, the following serials:—"Woodcarving," "Carpentry and Joinery," "Building Construction" (by Henry Adams), and "House Decoration."

PANELLING.—VII.

FINISHING THE ROOM—WINDOW AND FIREPLACE ENDS.

TO complete the room in hand, the window and fireplace sides remain, the complete panelling for these being shown in Figs. 1 and 3. Taking the former, we shall have to form two pieces of panelling as Fig. 2; these will be filled in between with one piece as Fig. 4 and another as Fig. 5, at top and bottom respectively. Fig. 2 consists of two stiles A, four rails B, and two mullions C; and in addition to these the five panels D. The right-hand stile on the left section of the panelling and the left-hand stile on the opposite section must be an inch above the normal width, and must be grooved to take the panelling which comes to it at right angles; the other two stiles on each will be the same width as the remainder of the framing, these being grooved to take the continuation of the panelling between.

no grooving will be wanted, but the stiles must have the extra width. This latter method of fixing will necessitate the fastening together of the angles before the panelling is placed in position; therefore the filling in panels (Figs. 4 and 5) will be difficult to get in if they are simply mortised and tenoned as shown sectionally in Fig. 17. The better way to do them in such a case as this will be to use an adaptation of the halving joint; the section when fixed will then be as Fig. 16, and the parts can easily be passed into position after the main parts are fixed to the walls.

Fig. 3 is built up in a similar manner to Fig. 1. The two outer parts are alike, and the filling consists of one piece only, this being shown in Fig. 6, while the top and bottom rails are shown in Figs. 11 and 12. The muntins are not shown, as

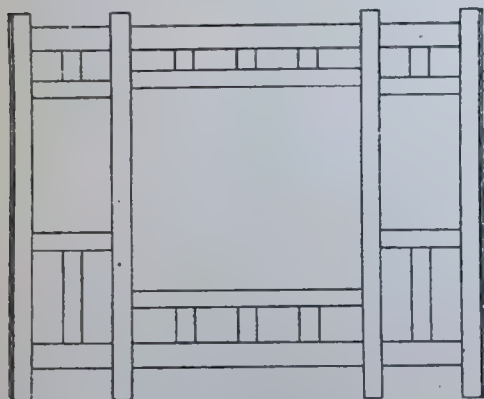


FIG. 1.—PANELLING FOR WINDOW SIDE OF ROOM.

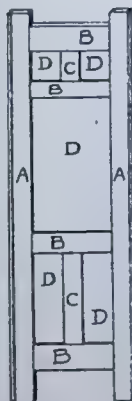


FIG. 2.—END PART OF FIG. 1.

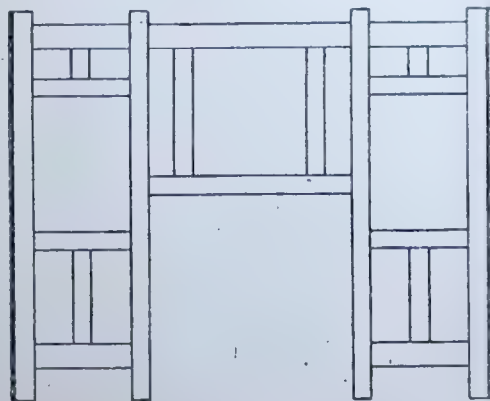


FIG. 3.—PANELLING FOR FIREPLACE END OF ROOM.

At Figs. 7 and 8 are the two stiles of the complete section, Fig. 2, thus showing the mortises for the rails in that section, and also those to take the rails in Figs. 4 and 5. The other edge of Fig. 8 is mortised as that shown in Fig. 7.

The rails for Fig. 2 are not shown separately. They will simply require tenoning to fit into the stiles, and will have one mortise in each to take the tenons on the muntins. These latter are shown in Figs. 9 and 10.

Fig. 13 shows one of the rails for the filling in parts (Figs. 4 and 5). The muntins of these are similar to that shown in Fig. 9, except in length, which will be made to suit. The sections, Figs. 4 and 5, can be fixed together permanently, so that there will be no loose parts.

The outer stiles, as just mentioned, must be grooved before the panelling is put together—that is, provided that the fixing is intended to be done as shown in Fig. 18. If to be done as Fig. 14

they are exactly the same as previously described in connection with the other part of the panelling.

As regards the fixing, the same applies to the filling as to that for the opposite side of the room; but we would strongly advise that the tongue and groove method be adopted, as shown in Fig. 18. This is really the easier, and far the most satisfactory, especially if any shrinkage should occur.

How to Fix Panelling.

We now come to the important question as to how best to fix the panelling to the walls. At first sight it would appear that scarcely any fixing would be required, but this is a fallacy; the fixing must be done properly, or the panelling will soon be loose and will appear to curl and twist in all directions. By far the best way of fixing is by means of grounds; that is, strips of wood fastened to the walls truly, by means of plugs, so that the panelling can be screwed to them. There is a certain

PANELLING (Contd.).

objection to this method on account of the space wasted by the thickness of the battens, but a clear air space behind the panelling will do a great deal towards ensuring a dry room.

The actual fixing of the panelling should be done with judgment and not haphazard. In fixing the two sides shown here the whole of the screws should be in the stiles, about four in the height of the room. Two of these can be placed so that the plinth and cornice, when fixed, will cover them entirely; the other two should be inserted at equal intervals in the height, so that what is seen of them will not be unsightly. The proper way to cover up the heads is shown in Fig. 15, and if care is taken to get a piece of wood for the plugs similar to that in which it has to fit, and to drive it in with the grain the right way, it will be scarcely seen.

must be fixed perfectly plumb, or there will be trouble at the angles of the panelling.

Should it be imperative that the panelling be fixed direct on the wall without any intervening grounds, thus saving a space of about $1\frac{1}{2}$ in., the plugs must be inserted in the wall so that the screws will go direct into them. It therefore follows that the plugs must be in exactly the right spots. The best way to ensure this is to make the holes in the panelling, then place it temporarily in position (this may be done a portion at a time), and mark on the wall exactly where the plugs have to be. The wall can be drilled at these spots, and the plugs inserted with the certainty that the screws will have good holding power.

CORNICE AND PLINTH.—The fitting of these can hardly be called panelling, although a necessary

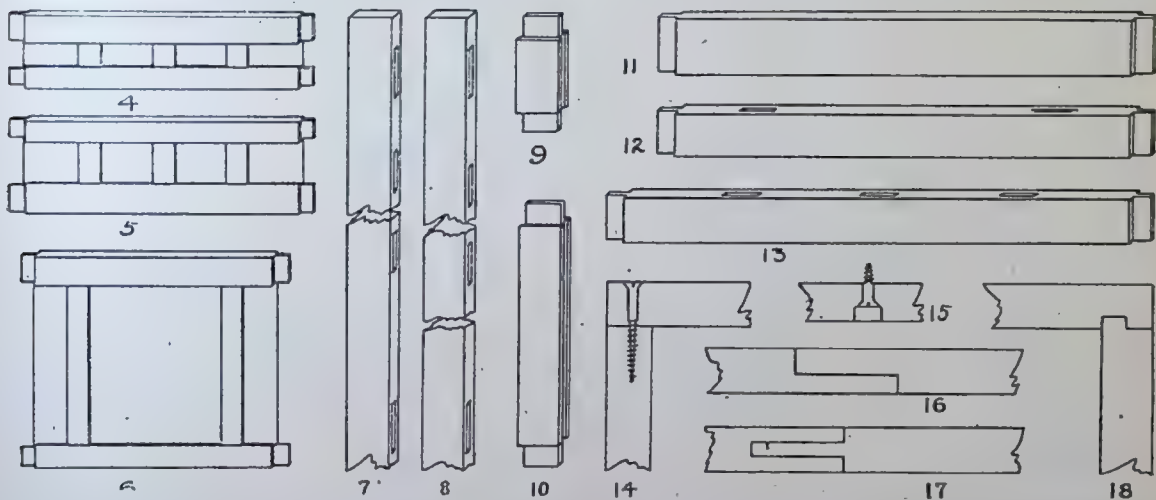


Fig. 4.—Filling Piece over Window. Fig. 5.—Filling Piece below Window. Fig. 6.—Filling Piece above Fireplace. Fig. 7.—Left hand Stile of Fig. 2. Fig. 8.—Right hand Stile of Fig. 2. Fig. 9.—Upper Muntin in Fig. 2. Fig. 10.—Lower Muntin in Fig. 2. Fig. 11.—Top Rail of Fig. 6. Fig. 12.—Bottom Rail of Fig. 6. Fig. 13.—Bottom Rail for Fig. 4. Fig. 14.—Square-screwed Joint at Corners. Fig. 15.—Method of Covering Screws. Fig. 16.—Section of Filling-in Piece as Halved into Main Panelling. Fig. 17.—Section of Filling Piece as Tenoned into Main Panelling. Fig. 18.—Tongue and Groove Joint at Corners.

THE GROUNDS.—In fixing these, the battens should be carefully straightened, so that the panelling will fit flatly on them; thus no blocking will be required. To take the window and fireplace sides of the room as examples, the grounds should be fixed horizontally across the room, so that each stile will be screwed to all four of the grounds, these latter being cut away at the fireplace and also at the window openings. An extra ground may be fixed vertically under and over the window opening, also over the fireplace, so that the filling in pieces will be properly supported.

PLUGGING.—For fixing the grounds plugs should be driven tightly into the joints of the walls; if these are plastered it will be an easier plan to drill into the walls for the plugs. All grounds

adjunct to it, but we need not dwell on this; any one who is able to make and fix the one will find it comparatively easy to do the other.

This article brings our series on the subject of panelling to a close. We have unavoidably treated it largely in the abstract, owing to all rooms being differently planned, of various sizes, and requiring different treatment. Should, however, any reader require advice as to the panelling of a particular room our "Question Box" columns are available for this purpose.

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NOTE.—The previous articles in this series on Panelling appeared in issues of January, February, March, April, June and August of this year. These may be obtained through any newsagent—price 3d. each—or direct from the Publishers (EVANS BROS., LTD., Sardinia House, Kingsway, London, W.C.), price 4d. each, post free.

FRETCUTTING AS AN ART CRAFT.

MATERIALS FOR OVERLAY WORK.

AS indicated last month the materials usually employed for overlaying are wood, brass, aluminium and xylonite in various colours. To those might be added copper, pewter, silver, ivory, vulcanite, and slate. Real mother o' pearl and tortoiseshell have occasionally been used as overlays, but more often as inlays or underlays.

In actual practice it is exceedingly rare to find silver chosen by the fretcutter. Unless used in a very thin sheet its cost is prohibitive, and when thin it does not look well. For the same reason pure ivory is hardly ever taken, more especially as white ivory-grained xylonite is an almost perfect substitute. This also applies to tortoise-shell, while with regard to vulcanite there is no special reason why this material should ever be selected.



FIG. 1.—OVERLAY WITH UNDERLAYS.

If a black overlay is wanted nothing looks better than ebonia wood. Mother o' pearl is rather brittle for delicate applied work, and there is no satisfactory substitute.

Wood for Overlaying.

For small ornamental work the recognised thickness of wood for overlaying is one-sixteenth inch. Special boards, saw-cut, are sold for the purpose, one side frequently being left rough in order to facilitate glueing. Obviously a hard and compact wood, without elaborate figuring, is most suitable for an overlay, and a few of the favourite kinds may be mentioned.

WHITE HOLLY, the purest of all woods, is largely used, its delicately mottled figure giving it an ivory-like appearance. White chestnut and sycamore, although hardly so compact in grain, serve as useful substitutes.

WHITE MAPLE is by some preferred to holly, partly because it is much cheaper and partly

because, being hardly so white, it is less easily soiled. Maple is a hard wood and cuts clean.

SATINWOOD, with its rich yellow colour and fragrant smell, is another favourite, but is less used on account of its higher price. On a black ground it looks remarkably well.

SILVERWOOD—sycamore or maple, stained to a rich silver-grey tint—is now very popular, and is very effective when used in conjunction with holly (or white xylonite) on a black ground.

EBONIA, which is the best substitute for ebony, is used more for backgrounds than for overlays themselves. For underlaying it can also be employed with good effect.

Other varieties, such as rosewood, padouk, walnut, satin walnut, birch, cherry, etc., are occasionally used, but chiefly when inter-overlaying (that is, the blending of different woods) is adopted. As a rule, an overlay is light in colour. A dark overlay on a light ground has a less pleasing effect than the reverse arrangement, but the employment of darker colours can often be very successfully tried in combination with lighter woods. Overlay woods cost from 2d. or 3d. per square foot upwards.

Sixteenth-inch wood is too thin to be cut alone, and unless two or more overlays of the same sort are being sawn it is customary to fix on a thin piece of waste wood below. When the boards are tightly nailed there are fewer ragged edges on the upper piece. Many workers adopt the plan of glueing a sheet of tough paper to the under side of the overlay board. This prevents ragged edges, and also saves the work should a breakage occur.

Xylonite for Overlaying.

On the part of some there is a prejudice against xylonite, partly because it is a manufactured material, and partly because it is apt to be associated with cheap celluloid. The former objection is hardly worth consideration. Paper is manufactured; so are canvas, glass and colours. Wood, metal and leather, if not manufactured, are at least converted and prepared, and there is no material used in craft work which does not first go through some process of manufacture. With regard to the second objection, xylonite certainly may, like other materials, be had in all fancy art shades. Just as we avoid vulgar colours otherwise, however, so we shun them in xylonite. The so-called "art" shades should never be used, not because in themselves they may be ugly, but simply because they do not go well with wood. If they blended well with wood the objection to them would vanish. Perhaps the one real drawback to xylonite is that it is inflammable. It should never come near a light, for if a large sheet caught fire the extent of the flame would be a serious danger.

Xylonite is sold by the square foot (price about

FRETWORK OVERLAYS (Contd.).

2s. per foot for the best quality, and only the best is worth using), and in thickness is measured in 1-100ths of an inch. The usual thickness for small work is 1-25th inch. The grain is compact and uniform, easy to cut and not brittle. It is usually cut between two thin boards of wood, although some workers prefer to use only one board below. Xylonite may be bought plain, polished one side only, or polished on both sides. It is better to have one side matt, as in this way it is more readily cemented to the wood. With glass-paper the polished surface may easily be removed.

WHITE XYLONITE is by far the most useful colour. Great care, however, should be taken to use only that known as "ivory grain." There are inferior xylonites on the market which, when cut, look merely like cardboard with a glazed surface. The grain of good xylonite is the same through and through, and when a sheet is bought the edge should be examined. If it looks like ivory or bone it is right; if it looks like cardboard it is

one of the good liquid glues sold in tubes, or the special xylonite cement may be used.

Metals for Overlaying.

It is a common mistake to use those too thin, and although stouter metal is harder to cut the finished appearance is worth the extra trouble. The gauge to select is B.W.G. 11, 12 or 13—roughly speaking, from 1-32nd in. to 1-25th in. Sheets should be had polished on one side.

Metal has to be cut between two boards of wood, holes being drilled for the nails. It is important to have all tightly fixed, any lack of rigidity increasing the labour. To lubricate the saw it is customary to grease two sheets of thin paper and place these between the wood and metal.

ALUMINIUM, BRASS and COPPER are all suitable for overlays. Aluminium is very light, but on account of its texture it requires careful treatment. Copper is softer than brass, but is firm, and needs to be well sandwiched between the wood boards. Pewter is also occasionally used.

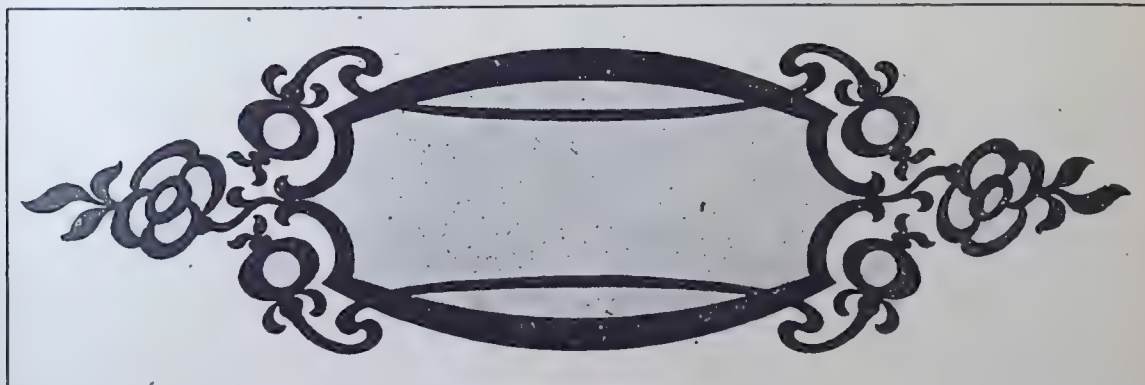


FIG. 2.—OVERLAY FOR OBLONG OR UPRIGHT PANEL. THE PARTS SHOWN SHADED MIGHT BE UNDERLAID.

inferior. Ivory-grained white xylonite, if used not less than 1-25th in. thick, has all the appearance of real ivory. If preferred unpolished the surface may have a rub with fine glasspaper.

OF COLOURED XYLONITE there is a large variety. The pale shades of heliotrope and uncertain blues and greens may be ignored, but deeper reds, greens and blues are occasionally useful for inter-overlaying and underlaying. From the point of view of harmony a little touch of a certain colour may be helpful.

MARbled, TORTOISESHELL, mother o' pearl and other xylonites are also procurable. Of course they are imitations, but many of them are wonderfully good. The figuring makes them unsuitable for very fine overlays, but for underlaying they are most useful. The mother o' pearl sheets lack the brilliance of real pearl, but are pleasing in themselves. The varieties known as golden marble and tortoiseshell are also most serviceable for small underlaid parts.

Xylonite may be fixed to a wood ground with

As a rule metal overlays look better when they can be fixed with small round-headed brass or nickelled screws. The design may not always provide for this, however, in which case shellac cement, sold in sticks and applied by heating, may be used.

SLATE.—It might be mentioned that slate (although not a metal) is largely used in Welsh districts for fretcutting. It cannot often be had less than 1/4th in. thick, but on fairly bold work the effect as an overlay is much finer than might be expected. On account of its brittle character special precautions have to be taken in drilling and cutting. It is usually cut by glueing between two boards of wood, the latter afterwards being removed by steeping in water. After glasspapering a good finish may be had by rubbing up with French chalk on a soft pad.

The illustrations represent typical examples of overlays. Fig. 1 is less suitable for wood than for xylonite or metal, but Fig. 2 could be used for any material. The tints indicate those parts which might with advantage be underlaid.

NURSERY FURNITURE.—VI.

TWO USEFUL CHAIRS FOR THE CHILDREN.

A PART from the question of comfort, the points to bear in mind when making a chair for the growing youngster are that it must not be too heavy for the little user to move about easily, and that it must be strong to withstand the usual run of hard knocks that it is likely to receive. The two chairs sketched here will be found suitable for the purpose in view, and if made with due care will last throughout the nursery period and long after.

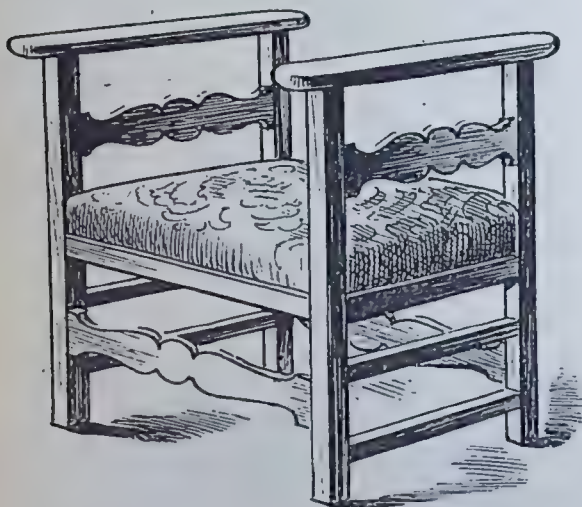


FIG. 1.—UPHOLSTERED NURSERY CHAIR—WINDOW SEAT TYPE.

DIMENSIONS.—General dimensions for Fig. 1, which is modelled on the window or music seat type, with two flat but comfortable arms but no back, is 18 ins. high by 15 ins. by 10 ins. In Fig. 2, as a corner chair having two backs but no arms, the height can be 2 ft., the over-all seat measurement being 12 ins. by 12 ins. Both chairs are shown with upholstered seats, but may have wood seats if preferred.

THE WOOD *en suite* with that previously chosen is oak. Beech or birch may be used as a substitute—or even deal, to be stained and polished or oiled—but as the quantity of stuff required is so small it will be better to keep to hardwood throughout. The cost of the necessary stuff need not exceed 2s. 6d., but may vary a trifle either way, according to local prices.

Construction of Window Seat.—Fig. 1.

LEGS (A).—Proceeding to get out the stuff for Fig. 1, four uprights or legs will be required, 1 ft. 6 ins. by 1 in. square net, or, if for withstanding strenuous use, 1½ in. square net. These

legs, as indicated at Fig. 3, carry a short tenon at top, and are mortised for front and back seat rails (F) and the shaped rails under (G), also the shaped side rails (C), two lower rails (E), and are holed for the rails (B) to be dowelled in.

SEAT RAILS (B) are allowed a length of 10 ins., this to include tenons should it be preferred to cut these instead of dowelling, the width being 1½ in., and the thickness the same as for up-rights, 1 in. or 1½ in., so that these parts finish flush together at the trial fit-up.

THE SHAPED RAILS (C) will relieve the sides from plainness, an alternative outline being noted at C1 (Fig. 3). Allowing for tenons they can be cut from pieces 10 ins. by 2½ ins., the finishing width being 2½ ins. by ¾ in. net.

LOWER RAILS (E), if of oak and carefully fitted, can finish ½ in. by ¾ in., but may be ¾ in. by ¾ in., with the 1½ in. legs, which they can enter to their full width.

THE FRONT AND BACK SEAT RAILS (F) take two pieces 1 ft. 3 ins. long by 1½ in. by 1 in. or 1½ in., and are tenoned to leg and pinned. If it is intended to fit a Trafalgar (*i.e.*, a drop-in) seat, the seat rails (B and F) can be cut with a rebate ½ in. by ¾ in. into the inner edges of the 1½ in.

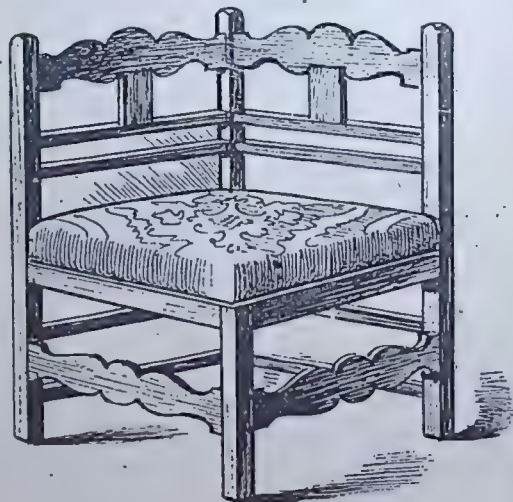


FIG. 2.—UPHOLSTERED CORNER SEAT FOR NURSERY.

THE SEAT PAD, to fit into this rebate, can afterwards be made when the chair is put together finally. It can be of ½ in. or ¾ in. thickness, 1½ in. wide, halved and nailed together. About three lengths of webbing one way and two the other can be interlaced, tacked to this framing in the usual way and then covered with a piece of black linen or canvas. Over this can be

NURSERY CHAIRS (Contd.).

layered cotton wool, flock fibre, or horse-hair to, about a thickness of $1\frac{1}{2}$ in. or less when pressed or stitched down. Calico cut to size can then be tacked to the edges of framing on one side and pulled over taut and tacked front and sides, being then tautened and tacked down in the same manner. The stuffing will require regulating so that there are no lumps, and the result should be a full, fairly firm seat in centre, curving away smoothly towards the edges.

Or the seat can be of the pincushion type, the rebates being webbed, covered with black linen, stuffed and stitched, covered with calico, over which the final covering can be stretched and tacked in the first case, and nailed with brass-headed nails in the second case respectively. Remnants of material, such as canvas, tapestry, velvet, velours, or rexine are obtainable for a small sum from most houses that have a furnishing drapery department.

Corner Seat.—Fig. 2.

BACK LEGS.—For the corner chair three back legs (H, Fig. 4) are required, 2 ft. long and 1 in. square net, or $1\frac{1}{8}$ in. by $1\frac{1}{2}$ in. as before. Each will require mortising for four square rails, two shaped rails and two seat rails.

SHAPED BACK RAILS at top (I) should finish about 2 ins. to $2\frac{1}{4}$ ins. wide by $\frac{3}{4}$ in. thick, from pieces 12 ins. long, including tenons. In the centre of the underside a shallow mortise will be cut, or the part can be holed for two dowels in the panel (J) which will be stub-tenoned or dowelled to correspond. Size for panels is 4 ins. by 2 ins., out of stuff to finish $\frac{3}{4}$ in. thick.

THE SQUARE RAILS (K), of which eight will be required, look well if a trifle wider than thick, say $\frac{5}{8}$ in. by $\frac{3}{4}$ in., but are allowed 12 ins. by $\frac{3}{4}$ in. by $\frac{3}{4}$ in. in the cutting list if preferred this way.

THE SEAT RAILS (L) will be got out of four

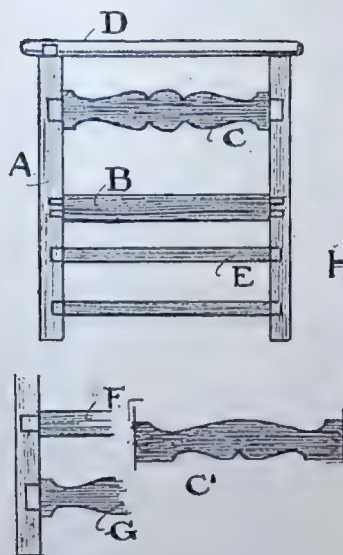


FIG. 3.—DETAILS OF WINDOW SEAT (FIG. 1).

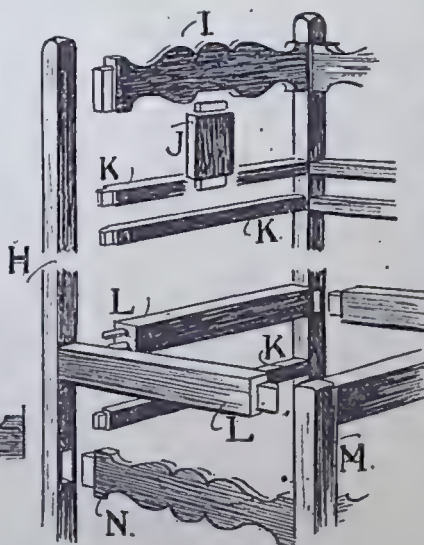


FIG. 4.—DETAILS OF CORNER SEAT (FIG. 2).

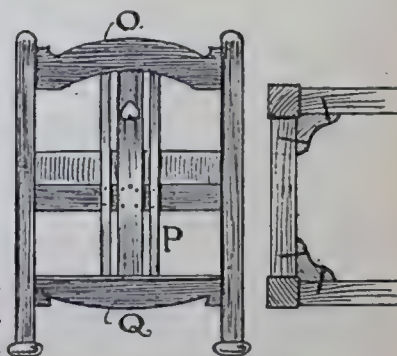


FIG. 5.—ALTERNATIVE SUGGESTION FOR BACK.

lengths of 12 ins. to finish $1\frac{1}{2}$ in. by 1 in. or $1\frac{1}{8}$ in. They can be tenoned to the legs, or (as shown) can be tenoned and dowelled into position.

FRONT LEG (M).—For this a length of 12 ins. will serve, to be holed and mortised for seat and shaped rails, and finished flush at top end or be very slightly rounded off.

THE LOWER SHAPED RAILS (N) come out at $2\frac{1}{4}$ ins. wide by $\frac{3}{4}$ in. by 12 ins., including joints.

FOR THE SEAT FRAME, if required, about 4 ft. of $1\frac{1}{2}$ in. by $1\frac{1}{2}$ in. stuff will be necessary, made as before described.

Alternative Suggestion.—Fig. 5.

As an alternative suggestion a sketch is offered at Fig. 5, which should work out effectively in a somewhat quaint way. As shown, this would form the sides of the seat, Fig. 1, but could be

WOOD SEAT.—A 3-ply perforated seat may be fitted, if preferred, and an extra quality seat of this kind is obtainable for about 1s. from Austrian bentwood manufacturers through the local furnisher. Or the seat may be of $\frac{3}{8}$ in. boards, grooved and tongued together, with a separate cushion made to be tacked down into position or be merely tied on with suitable tapes or cords.

SHAPED RAILS (G).—For the front and back shaped rails allow pieces 15 in. by $2\frac{1}{4}$ ins. by $\frac{3}{4}$ in., including tenons.

Care should be taken to round off all edges for the sake of comfort when sitting.

NURSERY CHAIRS (Contd.).

adapted also to the corner chair. The top rail (O), to shape, will finish 3 ins. wide by 10 ins. long by $\frac{3}{4}$ in. or $\frac{7}{8}$ in., tenoned each end to enter posts. The lower rail (Q) can finish $1\frac{1}{2}$ in. wide with shaped under edge only. Both rails will be mortised to receive the uprights (P), the centre lath or panel being 2 ins. wide with small fret-cut opening.

The uprights or bars on either side, $\frac{3}{4}$ in. wide and all $\frac{1}{2}$ in. thick net, are entered top and bottom into rails to their full width. As indicated they are also pinned or screwed to the seat rails. The legs or posts and seat rails can be further stiffened by fitting braces, to be screwed to the inner angles as noted in the part plan. If fixed sufficiently below the upper face of seat rails these braces will also serve to rest the seat pad upon, in which case the rebate in the rails may be dispensed with and the thickness of the rails themselves be reduced to $\frac{7}{8}$ in.

For those who desire to carry the same *motif* throughout the nursery set, it may be suggested that the article on combined play table and chair in a previous issue (July) will afford ample suggestion for the purpose. The present two chairs, however, are intended to break away somewhat from the rigidity of a set line throughout, and it may be added that to those who have in mind the making of something for a birthday or Xmas present to a child which will be prized he could not do much better than put in hand one of the two suggestions offered in this article.

Why and How It is Done.

"PRINCIPLES OF EDUCATIONAL WOODWORK," by W. A. Milton, Examiner in Manual Training and Principal of Rand Manual Training Centres, Centres, Square 8 vo., 350 pp., 311 illustrations. 6s. (Blackie and Son, Ltd., 50, Old Bailey, London, E.C.).

One indication of the world-wide efforts to provide woodwork instruction for boys and young lads is found in the number of volumes now published on the subject of manual training. It is perhaps unfortunate that many of these are issued under titles which suggest theory rather than practice, and that they profess to be written chiefly for the guidance of teachers and manual instructors. In most of such volumes which, from time to time, we have reviewed here the practical element has really been of the greater value. Woodworkers—amateurs or others engaged in some craft, who are not teachers—are apt to fly to handbooks for information where the *how to do it* may be set out plainly, but where the *why it is done* does not so clearly appear. To many such, "Principles of Educational Woodwork," by W. A. Milton, will be of great value. Mr. Milton is Examiner in Manual Training in the Transvaal, and his wide experience has enabled him to write a book full of sound practical advice. The title of the volume (similar to one reviewed in these columns three years ago) may fail to indicate its real value to the practical woodworker, but while the educational aim is paramount the practical side is never lost sight of in the

List of Parts.

		Long. ins.	Wide. ins.	Thick. in.
FIG. 1.				
A	Four uprights or legs ..	18	x 1	x 1 or 1 $\frac{1}{2}$
B	Two seat rails ..	10	x 1 $\frac{1}{2}$	x 1 or 1 $\frac{1}{2}$
C	Two shaped rails ..	10	x 2 $\frac{1}{2}$	x 2 $\frac{1}{2}$
D	Two arm rests ..	12	x 1 $\frac{1}{2}$	x 2
E	Four lower rails ..	10	x 1	x 2
Front.				
F	Two seat rails ..	15	x 1 $\frac{1}{2}$	x 1 or 1 $\frac{1}{2}$
G	Two shaped lower rails ..	15	x 1 $\frac{1}{2}$	x 1 or 1 $\frac{1}{2}$
Frame for seat if required	..	54	x 1 $\frac{1}{2}$	x 1 deal
FIG. 2.				
H	Three back legs ..	24	x 1	x 1 or 1 $\frac{1}{2}$
I	Two top shaped rails ..	12	x 2 $\frac{1}{2}$	x 2 $\frac{1}{2}$
J	Two panels ..	4	x 2	x 2 $\frac{1}{2}$
K	Eight rails ..	12	x 1	x 1 or 1 $\frac{1}{2}$
L	Four seat rails ..	12	x 1 $\frac{1}{2}$	x 1 or 1 $\frac{1}{2}$
M	One leg ..	12	x 1	x 1 or 1 $\frac{1}{2}$
N	Two shaped rails ..	12	x 2 $\frac{1}{2}$	x 2 $\frac{1}{2}$
Frame for seat if required	..	48	x 1 $\frac{1}{2}$	x 1
ALTERNATIVE, FIG. 5.				
O	Two top rails ..	12	x 3	x 2
P	Four uprights ..	13	x 1	x 2
	Two panels, fretted ..	13	x 2	x 2
Q	Two bottom rails ..	12	x 1 $\frac{1}{2}$	x 2
	Four ball feet if required ..	2	x 2	x 1
	Wood seat (if fitted) ..	14	x 12	x 1 or 1 $\frac{1}{2}$

Note should be taken that in the above list all lengths are on the full side to allow for paring, but all widths and thicknesses are net. 28

NOTE.—The other articles in this series are:—Toy Cupboard (May issue), Canopy Cradle (June), Combined Chair and Table (July), Table (August), and Cot and Cot-bedstead (September). These numbers may be obtained through any Newsagent, price 3d. each, or direct from the Publishers (EVANS BROS., LTD., Sardinia House, Kingsway, London, W.C.), price 4d. each, post free.

consideration of the principles. Any craftsman will turn out better work if he has such a volume beside him for reference, and the mere reading of it will give him an insight into many problems which may have baffled him before. We admit we do not care for the black-background illustrations, but the printing is so excellent throughout that none of these suffer in clearness. The volume is handsomely bound. 64

Furniture Prepared for Carving.

Many amateur carvers are inexperienced in woodwork construction and prefer to work on ready-made articles of furniture. The Handicraft Studios, of Woodstock Road, Taunton, have issued a catalogue with photographic illustrations of articles in oak, walnut, mahogany, basswood, etc., specially designed with surfaces for carving. Designs for these are also supplied. The range includes frames, screens, tables, bookcases, cabinets, overmantels, etc. By mentioning THE WOODWORKER and sending a stamp for postage, Mr. W. S. Williamson, the principal, will send a copy of the catalogue free on application.

THE SEPTEMBER issue of *The Studio* contains an illustrated article on the recent National Competition of Schools of Art. The publishers announce a new volume in the series dealing with peasant art of Europe—"The Peasant Art of Italy" (see front cover), which will have over four hundred illustrations.

THE WOODWORKER PRIZE COMPETITIONS.

PLEASURE AND PROFIT FOR SPARE HOURS.

MONEY PRIZES.

THIS month we give particulars of two more competitions. Both are calculated to provide profitable recreation as well as to be of practical value to all woodworkers. We desire that these competitions shall be a kind of system of self-help, making for more efficiency in the competitor and helping to overcome many of the small difficulties which beset one every day. Viewed in the light of a hobby only, these competitions will provide fascinating work for every man in love with his craft.

Many readers will enter the competitions for the pleasure and profit that the occupations will afford. As a further incentive we are offering cash prizes. For this month's competitions the following prizes are offered:

For Competition No. 3.—Design for a Bracket.
First Prize, 5s.; Second Prize, 2s. 6d.

For Competition No. 4.—Mortise and Tenon Joint.
First Prize, 10s.; Second Prize, 5s.

Introduce this feature to your friends; it will be a help to them. 65

No. 3.—DESIGN FOR A BRACKET.

In all work, and more especially when certain articles are made to order, the question of cost is an important consideration.

For the two best designs for a useful bracket shelf, of the selling value of 2/6, Two Prizes are offered: First, FIVE SHILLINGS; Second, HALF-A-CROWN.

The cost of materials to be used must not exceed one shilling, and the estimated time occupied in making should not exceed 2½ hours.

The bracket designed may be in wood or metal.

Drawings, in ink or pencil, may be full size, or to scale not smaller than 3 ins. to the foot. Sizes must be marked and sections of any joints shown. A list of materials used and a brief description of the construction should be written on the drawing.

Drawings, marked "Competition No. 3," must be received on or before Wednesday, October 15th. The prize sketches will, if suitable, be published. Unsuccessful suggestions, if used, will be paid for at our usual rates. 47

No. 4.—MORTISE AND TENON JOINT.

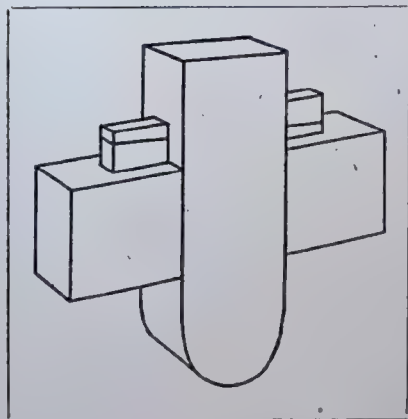


FIG. 1.—PERSPECTIVE SKETCH OF JOINT.

Figs. 1 and 2 show a mortise joint with haunched tenons and fox wedges. For the best model as shown we offer Two Prizes: First, TEN SHILLINGS; Second, FIVE SHILLINGS.

The following conditions are to be observed:—Wood used to be yellow pine. No files or glasspaper to be used. Model to be hand made throughout, but must not be glued up. Tenons to be one-third the thickness of wood. Name and full address of competitor to be written on model or on a piece of paper pasted to model. Measurements not given are left to the judgment of competitor.

Models, marked "Competition No. 4," must be received on or before Wednesday, October 15th. 44

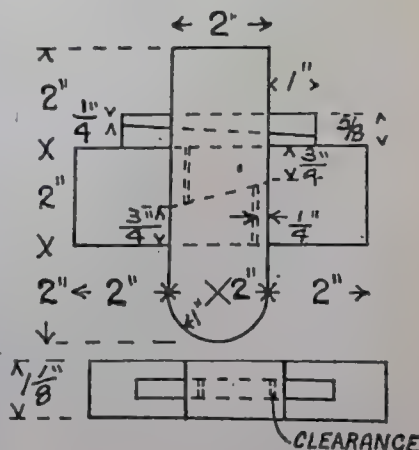


FIG. 2.—ELEVATION AND PLAN.

NOTE.—Any reader may, if he desires, enter for both competitions, but each competitor must cut out and enclose the COMPETITION COUPON (available for October only) on page 3 of Cover.

ADDRESS.—The Editor, WOODWORKER AND ART CRAFTSMAN, Sardinia House, Kingsway, London, W.C.

THE QUESTION BOX.

ILLUSTRATED REPLIES TO READERS' QUERIES.

QUESTIONS of general interest dealing with any branch of woodwork or other handicraft will be answered here. Readers, however, will kindly note:—(1) As the Editor may desire to reply by post a stamped addressed envelope must be enclosed. (2) Questions will be answered as early as possible after receipt, but when sketches have to be prepared, or when research has to be made, a short interval must elapse.

NOTE.—With each query must be sent a "Question Box" Coupon. (See page 3 of Cover). All queries to be addressed: Editor, WOODWORKER AND ART CRAFTSMAN, Sardinia House, Kingsway, London, W.C.

Windsor Chair.

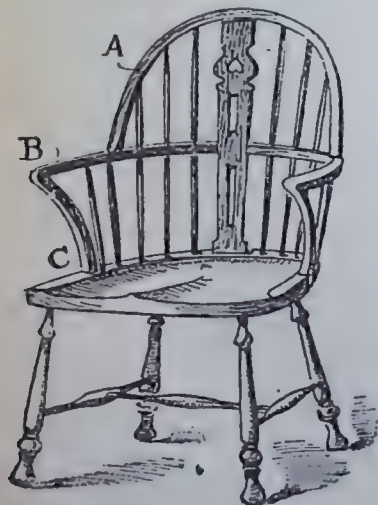
[414] C. K. F. (Bristol) writes:—"Can you refer me to instructions for making a chair of the Windsor cottage type? Could you give me measurements?"

REPLY.—We give a rough sketch of the type of chair you refer to. Dimensions for a large size may be: seat, 20 ins. by 20 ins. by 1½ in., usually of elm, D-shaped, with the centre sunk or gouged out; height of seat from ground, 18 ins.; height of arms from seat, 10½ ins.; height of back from seat, 26½ ins.; width of ditto, 21 ins. The shaped back rail (A) can finish 1½ in. by 1½ in. by 4 ft. 2 ins., the extremities being dowelled into arm rail (B). This arm is 1½ in. by 1½ in. thick by 4 ft. 3 ins., also D-shaped, and measures

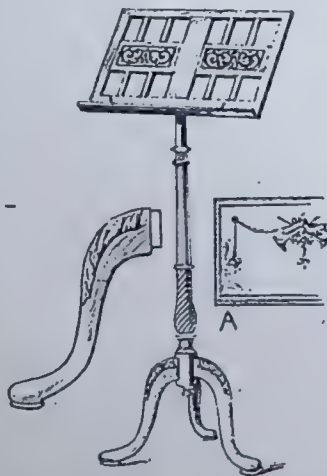
Music Stand.

[415] E. W. R. (Wood Green) writes:—"Could you please publish a rough sketch for a music stand with three feet and with a little indication of carving? I should like it with a full sized desk for open music 20½ ins. by 14½ ins."

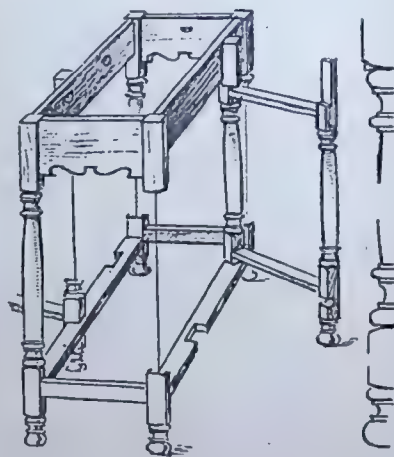
REPLY.—We give a suggestion for the music stand you wish to make. You do not state what wood you are to use, but assume it will be mahogany stained to a dark Chippendale colour. Size for the reading slope can be 21½ ins. by 15½ ins. out of ¾ in. stuff. You could have this fret-cut similar to those on a grand piano, but this is a matter of taste. The sketch may be worked out in fretwork, or the panels may be carved.



WINDSOR CHAIR (No. 414).
A Very Comfortable Seat.



MUSIC STAND (No. 415).
With Carved Cabriole Legs.



GATE-LEGGED TABLE (No. 416).
For Description see next Page.

22½ ins. over extremity of arms to which the supports (C) 12 ins. by 1½ in. by 1½ in. are pinned. The centre upright can be 3 ins. wide by ¾ in. thick, notched into arm rail and stubbed top and bottom into rail and seat. The sticks are 1 in. diameter at ends, with a swell to ¾ in. in centre. The holes for their entry can be bored at the required angle by boring along a block of wood cut to agree, a small sketch of which was given in THE WOODWORKER for September, 1912 (Stick and Umbrella Stand, page 230.) The legs are 2½ ins. in diameter; underframing 1½ in. diameter, leg splay on ground is 21 ins. by 21 ins., and rake of back 6 ins. The Windsor has always been a favourite type of chair and is associated with comfort. The Chippendale Windsor has flat-topped arms and cabriole legs. 31

The slope may be framed up, the outer frame being ¾ in. wide, mitred at corners and keyed, or mitre-halved and pinned. The cross panels will be halved together and stubbed into framing, and the bars stubbed into position in the same way. If to be in one piece, the stuff had better be of narrow strips tongued together, each alternate piece having the grain reversed. A dainty effect could be obtained by inlaying with ½ in. satinwood banding, with a trophy and festoon as indicated at A. The slope can be attached to the pillar by a brass shaving stand movement so that the pitch can be adjusted. Height to the centre of slope would be about 3 ft. 6 ins. The pillar can be turned up out of 2½ in. stuff and is intended to have the shaft reeded and the swell below twisted. Total length of

THE QUESTION BOX (Contd.).

column will be 2 ft. 6 ins.; length of cabriole leg, 14 ins., with the knees carved acanthus. Legs are set at 12 ins. from ground, and the splay of the triple legs from toe to toe outside would be about 14 ins. These sizes are approximate. Usually thin stands are bored for a shaft, but as we read your letter you do not require to adjust the stand in this way. You will find details of a music stool and cabinet in the issue for September, 1912 (page 241), which can be had for 4d. post free.

33

Gate-Legged Table.

[416] C. E. S. (Chester) writes:—"May I ask if you could give me some details for making a gate-legged table in oak, to suit a room which has an easy chair and writing table both made from WOODWORKER designs. I wish it with two oval flaps to seat four or five people."

REPLY.—We think you will get the information you require from the sketch on preceding page, which shows the underframing of a gate-leg table. A size suitable for your purpose is 3 ft. 6 ins. by 2 ft. 6 ins. over top. Legs may be 2 ins. by 2 ins. by 2 ft. 4 ins.; length of square at top is 6 ins., and from ground to top of lower square 8 ins., allowing $1\frac{1}{2}$ in. for lower turned toe and 14 ins. for turned shaft. The upper end rail, with shaped under edge, shows $9\frac{1}{2}$ ins. wide between legs, by $4\frac{1}{2}$ ins. high and $\frac{7}{8}$ in. thick. Lower end rail is $1\frac{1}{2}$ in. by $\frac{3}{4}$ in. or $\frac{7}{8}$ in. net. The two side rails under top are $3\frac{1}{2}$ ins. wide, and the framed up length between legs 1 ft. 9 ins. making the over all sizes 13 ins. by 2 ft. 1 in. Lower side rails are $1\frac{1}{2}$ in. by $\frac{3}{4}$ in. or $\frac{7}{8}$ in. The gate-leg supports to the top are made to fold into this framing, and the simplest way will be to frame up the two pairs of legs to their full length and cut as required. Part of one leg is cut and screwed to the width of the upper side rail, the remainder of the square being pivoted immediately under so that the leg when closed will allow the leg squares to be in line along their length. In the same way the toe and part of the square of this leg are cut away so that the lower end can be pivoted to the under rail. The projecting leg of the gate is halved above to set into the upper rail, and the lower square retaining the toe is halved into the lower rail. The position of the pivoted leg from the leg nearest to it is $8\frac{1}{2}$ ins., measuring over both legs, and the width of the gate will be 12 ins. over all. The framing can be attached to the top by screwing up through the thumb slots in the upper rails as indicated, and the gate legs are opened to an angle of about 70 degrees when supporting the side flaps, a small dowel being entered into the under side as a stop. An enlarged note is added for the turning, but this might be elaborated in detail.

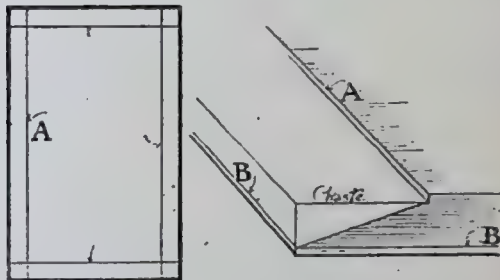
32

Working Mouldings Across Grain.

[417] C. J. B. (Purley) writes:—"I am working a moulding on an oak board across the grain and find that small bits of wood splinter off. How can this be avoided? I have the same difficulty with a chamfer on a panel."

REPLY.—In working a moulding across the grain on the edge of a board the ends always have a tendency to chip if they are not supported in some way. It is therefore advisable to cramp a piece of wood of similar

thickness close up flush with the edge to be moulded, so that the plane can cut through this as a continuation of the edge, thus saving the strain on the corner of the board itself. In this way you should have no trouble if the plane has a proper cutting edge. If the wood splinters all along the line the plane will probably have been set too coarse for the cutting, or the iron may not have been perfectly flush with sides of plane. With regard to the chamfered or bevelled panel, the end grain sides should be done first. If you proceed as indicated in the sketch here you should not go wrong.



WORKING MOULDINGS ACROSS GRAIN (No. 417).

Mark off the width of the bevel A on the face of the board with the gauge. If you have not one handy you can improvise one by entering a suitable screw into a spare block of wood so that you can cut with the head at the distance required. Also mark off the finish of the bevel, say $\frac{1}{4}$ in. thick, at B on all edges. A pencil line drawn between the two, as indicated, will give the angle of the bevel. Rebate the square 1-16 or $\frac{1}{8}$ from the face of panel, and remove the waste as indicated by the unshaded lines.

34

Worm in Wood.

[418] A. G. P. (Walworth) writes:—"I have a wax polished oak hall stand which has suddenly developed worm-eating. Can you advise me how to stop this?"

REPLY.—The best and safest method of dealing with wood that has become affected with worm is to cut that part away, if possible. If this cannot be done, the next best thing is to thoroughly saturate the affected parts with benzene or paraffin, using a small syringe to flush the holes. This will very possibly check the pest. After the wood has been well soaked the holes can be filled up with paraffin wax, coloured down to match the wood under treatment. Carbolic is sometimes used instead of paraffin, two parts carbolic in one of water applied in a similar manner. It has been said that hydrogen peroxide acts as a poison on worm in furniture. When applying the solution the hydrogen peroxide should be copiously flooded into the holes of the affected part, using an oil can for the purpose, at intervals of three days or so for about a month. Afterwards beeswax and resin, in the proportion of three parts of wax to one of resin, can be used to stop the holes, the filling being coloured to match the oak. In many cases it has so far been found impossible to destroy worm in furniture once they have settled there.

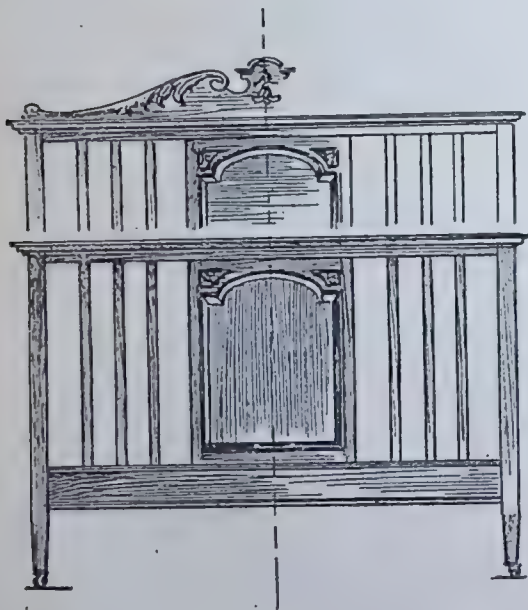
35

THE QUESTION BOX (Contd.)

Wood Bedstead.

[419] G. R. M. (Birmingham) has asked for an idea for a wood bedstead to match the design of a cheval dressing table, illustrated on page 208 of our issue of August, 1912 (Volume XVI.) or to match wardrobe shown on page 194 of our recent August issue.

REPLY.—The suggestion we give for a wood bedstead shows head and foot ends. The width of the bedsteads over posts is 4 ft. 6 ins. Height of the foot end can be 3 ft. 3 ins. to 3 ft. 6 ins., and for the head end, 4 ft. 3 ins. to 4 ft. 6 ins., exclusive of the pediment which can be 6 ins. high, carved and moulded. Cornice moulds can be $1\frac{1}{2}$ ins. by 4 ins.; the top rail under, $1\frac{1}{2}$ ins. by 2 ins.; foot rails, 5 ins. to 7 ins. wide, with lengths of $\frac{3}{4}$ in. mould top and bottom on face to butt between the posts, thickness of the rail being $1\frac{1}{2}$ ins.



DESIGN FOR WOOD BEDSTEAD (No. 419).

The posts should be $2\frac{1}{2}$ ins. by $2\frac{1}{2}$ ins., tapered (to receive $1\frac{1}{2}$ ins. castors) 9 ins. from ends. Slats can be $1\frac{1}{2}$ in. by $\frac{5}{8}$ in., and the panel 18 ins. wide, with $1\frac{1}{2}$ ins. framing and $\frac{3}{4}$ in. bevelled panel. The head end can have two $4\frac{1}{2}$ ins. rails fitted below, and the sides of the bedstead can be of wood with iron dovetails to fix on; or special iron sides can be procured to fit to both head and foot ends as a stiffening in addition to the sides between head and foot ends.

39

Walnut Stain for Mirror Frame.

[420] R. R. C. (Bournemouth) writes: "I have carved a mirror frame in whitewood, and wish to stain it walnut. Will you kindly tell me how to proceed?"

REPLY.—Dissolve a sufficient quantity of Vandyke brown powder in boiling water, and when cold the stain will be ready for use. The stain can also be dissolved in turpentine, but it does not work so well as in water. Stephen's stains for wood are useful.

You will have to dilute the latter considerably as they are too intense to be used as bought. Work the stain into the carving with a brush, using the colouring liberally. When nearly dry rub well into surfaces with a rough rag wad. When stained and dry give a coat of polish with a camel hair brush. You can then get a polish by brushing the carving briskly with a hog hair brush, and used in conjunction with a coarse rag you should get a good finish. Or you could oil the surface with fresh linseed oil, and afterwards brush and rub it.

41

Workbox [421]. J. L. M.—In last month's issue you will find a list of the WOODWORKER designs (new series). In Set No. 3 is included the pattern for a very fine Lady's Workbox. This is designed for inlaying, but might with care be adapted for carving. In our issue for July, 1911 (4d., post free) you will find full detailed instructions for making this workbox. It has a tray and secret drawer and may be used as a jewel casket.

Leaded Lights [422]. J. C. D.—For small leaded lights suitable for cabinet doors, etc., write to Messrs. J. R. Miles and Son, 43, Mile End Road, London, E.

Handbooks on Polishing [423]. T. M.—We have two excellent handbooks on polishing: "Practical Polishing," price 6d., or 7d. post free, and "Staining and Polishing," price 1s., or 1s. 2d. post free. The latter is a much larger handbook, dealing with the whole subject of wood finishing.

Inlays [424]. D. S. J.—You cannot do better than write to Messrs. Borst Bros., 370, Old Street, London, E.C., for their catalogue. They supply not only inlay bands, but also ornaments, panels, etc. From them you can also obtain wood and mouldings.

Garden Seat [425]. G. B.—For the garden seat illustrated in our August number the price of oak should work out at about 17s. 6d. If you use teak you cannot easily do it under 25s., but birch should not cost you more than 12s. 6d. Remember of course that prices vary in different parts of the country, but as you are in London you might call at Messrs. Young, 1, Virginia Road (or 80, Boundary Street), Bethnal Green, E. We have obtained these prices from Mr. Young.

Pole Lathes [426]. R. P. D.—Yes, pole lathes may be purchased. A very fine one is supplied by Messrs. Benson and Co., Ltd., Eyot Works, Hammersmith, W.

Jewellery Making [427]. C. C. B.—Write to Messrs. Plucknett and Co., Ltd., 29 and 30, Poland Street, London, W., who supply not only tools, etc., for jewellery making, but for all metalwork. Articles on hand made jewellery appeared from March to December (inclusive), 1910. We can send you the ten numbers for 2s., post free.

Bedroom Suite [428]. C. J.—See April, 1910 (Washstand), June, 1910 (dressing chest), August, 1910 (wardrobe), and September, 1910 (bedstead). The four numbers you can have for 11d. post free.

Corner Cabinet [429] J. G. D.—For illustrations of hanging Corner Cabinet see issues November, 1910, and September, 1912. The former will perhaps suit you best, as it can be made to any size. All necessary particulars as to construction are given. Back numbers we can send for 4d. each, post free.

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ELEMENTARY WOODWORK.

A SMALL OCCASIONAL TABLE.

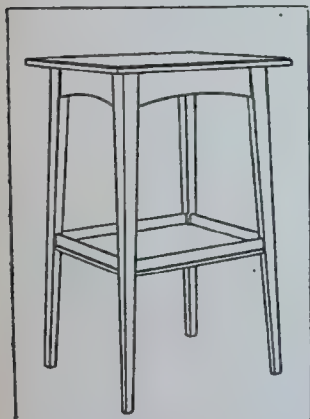


FIG. 1.—SMALL TABLE.

mahogany and satin walnut are all suitable, or the work could be carried out in American whitewood and afterwards stained. The parts required are these:—

	in.	in.	in.
Four legs	25½ × 1½ × 1½		
Top	16 × 12 × ¾		
Two side rails ..	11½ × 2½ × ¾ or ¾ in.		
Two end rails ..	7½ × 2½ × ¾ or ¾ in.		
Shelf	13½ × 9½ × ¾		
Two side shelf rails	12½ × 1½ × ¾ or ¾ in.		
Two end shelf rails	8½ × 1½ × ¾ or ¾ in.		

These sizes allow for tenons, but are otherwise net.

SETTING OUT.—To ensure accuracy, a full-sized drawing should be made. If this is done there will be no difficulty in getting the correct taper and angles.

LEGS.—These are 1½ in. square, tapering to ¾ in. square at the floor. The taper, however, is on the two inside faces only, and thus the work is simplified. In length, the legs show 25½ in., but short tenons should be cut as shown at Fig. 5 to enter underside of top. The inner faces are mortised to take the tenons of rails. (Fig. 5, a.) Narrow mortises are also cut to take similar tenons on the shelf rails. The width across the legs at top is 12 ins. by 8 ins., and at the floor 14 ins. by 10 ins.

TOP.—This may be in one piece, 16 ins. by 12 ins., finishing ¾ in. thick. The top edges may be chamfered ¼ in. Shallow mortises are cut in the underside to take the leg tenons.

RAILS.—These are shaped as shown, being 2½ ins. wide at the ends and 2 ins. at the centre. If a thickness of ¾ in. is taken screws may be passed through the rails (by means of thumb slots) to secure the top. The length of side rails at the top shows 9½ ins., and length of end rails 5½ ins. On account of the tapered legs, however, these lengths are slightly increased at the lower side, and here the full-sized drawing which the worker has made will be found of use. Tenons are cut at ends of each rail to enter the legs. The rails stand in ¼ in. from outer face of legs.

SHELF.—The lower shelf is intended to stand in about 1-16th in. from face of legs. In size it will then work

out at about 13 ins. by 9 ins. The corners are cut out to fit the legs (Fig. 5, b) and the shelf will be screwed to its rails from below, as Fig. 5, c.

SHELF RAILS.—Between the legs the side and end rails will show, respectively, 11½ ins. bare and 7½ ins. bare, but in the cutting list allowance is made for tenons to enter the legs. For the sake of rigidity it is important that the rails are securely fitted. They should stand back ¼ in. from edge of shelf.

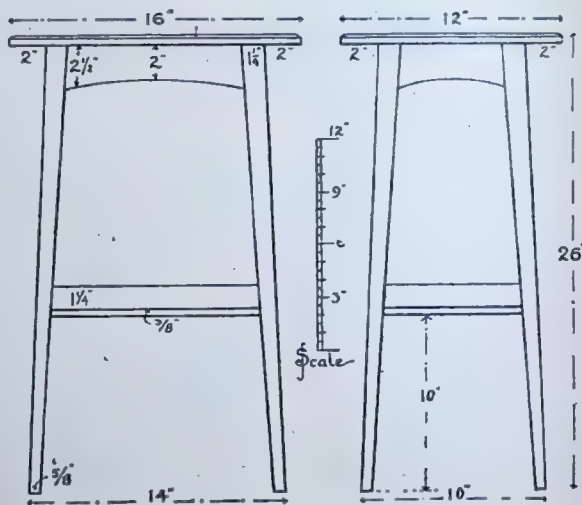


FIG. 2.—FRONT ELEVATION. FIG. 3.—END VIEW.

FITTING.—After a trial fit up, the top and lower rails are tenoned and glued to the legs. The top is glued by means of the short tenons on legs, and is held by glued blocks in the inner angles, two at each of the four sides. As already indicated it may be

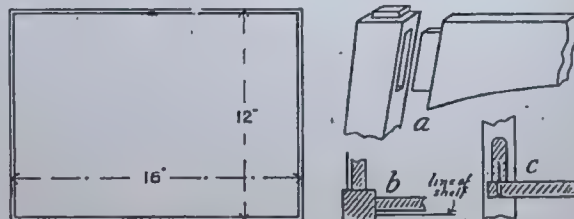


FIG. 4.—PLAN OF TOP.

FIG. 5.—DETAILS.

strengthened by cutting thumb slots in the rails and screwing through into the top. The lower shelf is screwed to its rails from below, as Fig. 5 c.

FINISH.—If in oak the table should be wax-polished. American whitewood may be stained to a walnut or mahogany colour and afterwards polished. Mahogany, walnut and satin walnut may be French polished.

Although not an exercise for the mere beginner this table presents no difficulty to the young amateur who has an elementary knowledge of joints, and who knows how to use the plane, chisel and tenon saw.

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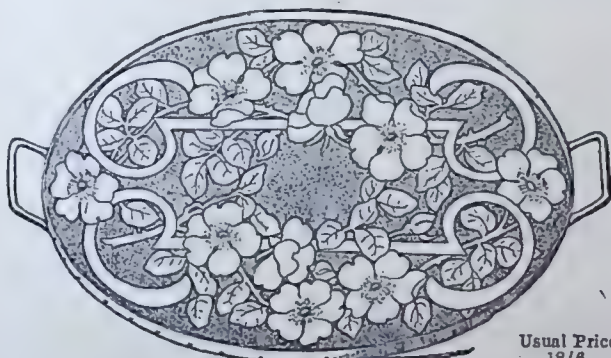
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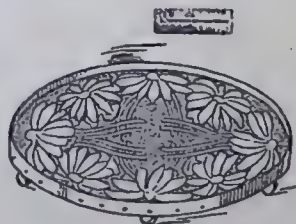


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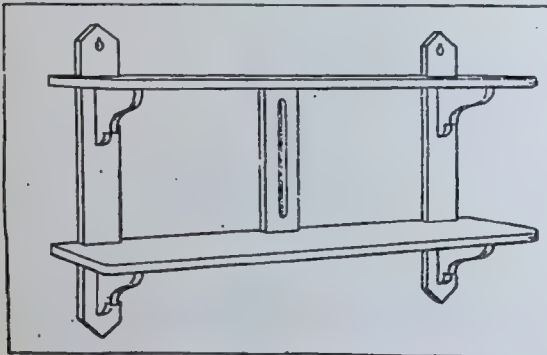


FIG. 1.—USEFUL HANGING SHELVES.

THE WOOD may be deal or American whitewood, but it may be pointed out that such shelves would look well in a parlour or bedroom, and in this case oak might be used. For the size given the following parts will be required:—

	ft.	in.	in.	in.
Two shelves	2	6	6	$\frac{5}{8}$
Two uprights	1	6	$2\frac{1}{2}$	$\frac{5}{8}$
Centre slat		$10\frac{1}{2}$	$2\frac{1}{2}$	$\frac{5}{8}$
Four brackets		$5\frac{1}{2}$	$3\frac{1}{2}$	$\frac{5}{8}$

The brackets may all be got out of a piece 16 ins. by 4 ins.

SHELVES.—These should finish $\frac{5}{8}$ in. thick, and may have rounded front corners. The back edge has three notches cut ($2\frac{1}{2}$ ins. long by $\frac{5}{8}$ in. wide) to take the uprights and slat. (See plan, Fig. 2.)

UPRIGHTS.—The sizes for these may be taken from

Fig. 2 (elevation.) They are pointed at both ends, and holes as indicated should be bored for hanging the shelves to the wall. The uprights might, if desired, be notched $\frac{1}{2}$ in. (as little inset *a*) to take the shelves. If this is done the notches at back of shelves will have to be cut only 2 ins. wide instead of $2\frac{1}{2}$ ins.

THE CENTRE SLAT is added to keep the shelves rigid. It may be plain or may be pierced as suggested in the diagrams.

THE FOUR BRACKETS may be drawn full size from the inset sketch *b*. The grain of the wood had better run the long way. The shaping may be cut with a pad saw or fretsaw, and care should be taken to clean up the edges.

FITTING.—In this there is no difficulty, the whole being done with $1\frac{1}{2}$ in. or $1\frac{3}{4}$ in. screws. The shelves are 9 ins. apart, in the position as marked on Fig. 2.

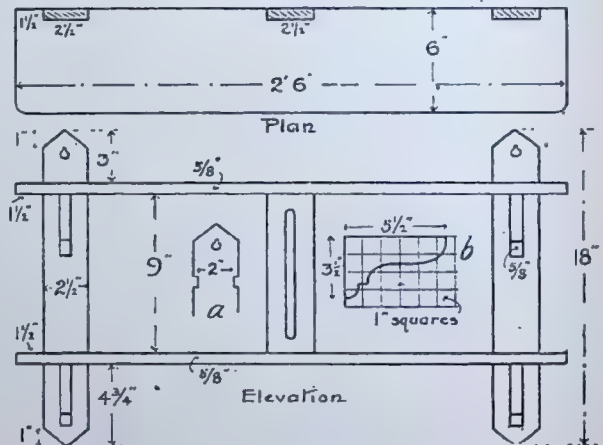


FIG. 2.—DIMENSIONED PLAN AND ELEVATION.

The shelves are fitted to the uprights by means of the notches in the former, and are screwed from behind. The centre slat is similarly screwed. The brackets are screwed to the uprights from the back and to the shelves from above.

20

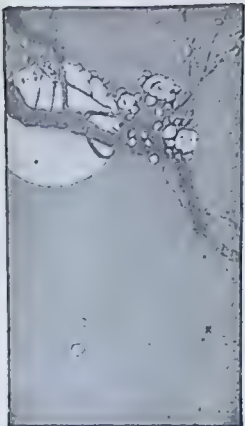
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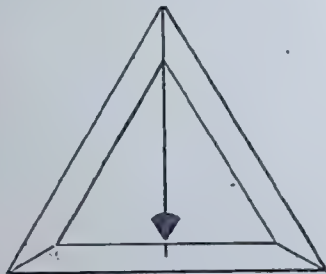
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UNDER the title of "How To Do It," we are always pleased to receive from readers short original suggestions (preferably illustrated) dealing with woodwork, metalwork, or any other handicraft. Interesting paragraphs dealing with every-day problems or difficulties in practical work will have preference. A postal order for each contribution used will be sent on October 10th. Contributions, *which must be original*, should be marked "How to do it," and addressed:—EDITOR, WOODWORKER AND ART CRAFTSMAN, Sardinia House, Kingsway, London, W.C.

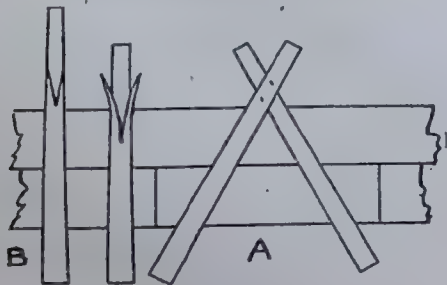
A Useful Level.

A level that is sufficiently accurate for ordinary work can be constructed on a triangular frame of light wood (as shown in the illustration) on which a plumb bob and line is attached. The centre line on the base cross-piece can be found by placing the level on a smooth surface, then making a temporary mark when the bob comes to rest, whereupon the level is turned around or in an opposite direction and another mark made where the bob comes to a rest. If there is a slight difference in the marks made, find the exact centre between them and draw a line.



How to Use Wood Pins Instead of Nails or Screws.

It is sometimes inadmissible to use metal (or at least iron) in the fixing of various articles together. For instance, in making a copper lid the use of iron would result in the clothes being covered with iron mould



after the first washing day, and even to use brass screws is not satisfactory. The only way, therefore, is to use wood pegs, and these have not sufficient holding power if friction only is depended on. The best way is to either drive in the pins on the slope, as at A, or to drive them in straight and to wedge them, as at B. The former method is a strong one provided that the parts can be kept absolutely close together while the

pins are driven in. If this is not done it is impossible to get them close after. On the other hand, by using the alternative method, the joint can be tightened up after the pins are driven, and the wedges will hold the joints firmly. By cutting the pins as shown, each one will form its own wedge. No matter which method is used the pins should be square in section; they will then hold better and are less liable to split the wood when driven in tightly.

10

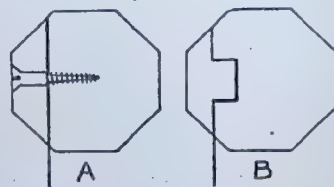
To Lubricate Wood Bench Screws.

Wood bench screws, or any kind of bearings where wood parts work on each other, should not be oiled or greased, but well polished with black lead. This by itself is a good lubricant but the polishing makes it much better. The real old-fashioned black lead will give the best results—better than one of the new fangled stove polishes, although the latter are made up of black lead and other ingredients.

5

To Fix Blinds to Rollers.

An improvement on the usual plan of fixing the blinds to the roller with tacks is shown at A, where the roller is made in two parts which are screwed together, the blind being clipped tightly between. The two strips forming the roller should be screwed together before the roller is shaped; they will then always go back into the right place again.

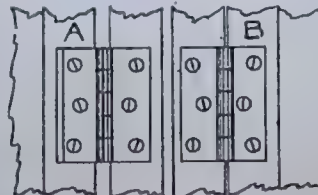


If instead of the two parts of the roller fitting together flat, as A, they are made to come together as B, the result will be still better, though the joint will be more difficult to make. These methods are suitable for all blinds, large and small.

6

To Make a Door Rise as it Opens.

If a door rubs on the floor in front as it opens, it may be made to swing clear by altering the bottom hinge; that is, providing that the fault is not too great. B shows the hinge as it will be originally, and A after alteration on the door post only. When it is found that the alteration is sufficient to make it swing clear, the hinge can be altered on the door to correspond.




8

An Easily Made Gate Fastening.

For field gates the fastening shown in Fig. 1 will need a good deal of beating. It is automatic in action, and there is nothing about it to get out of order. The fas-

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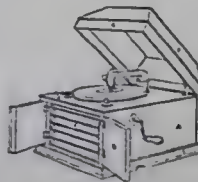
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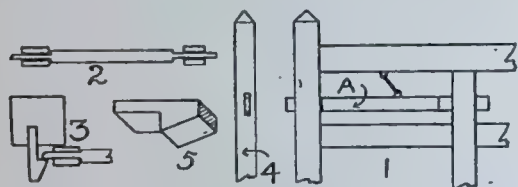
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HOW TO DO IT (Contd.).

tening proper (A) is tenoned so that it has room to oscillate between the gate head and the first upright, the former being mortised to allow it to project through, as shown in Figs. 2, 3 and 4. The catch is shaped as Fig. 5, and is fixed in the post as Fig. 3. The fas-



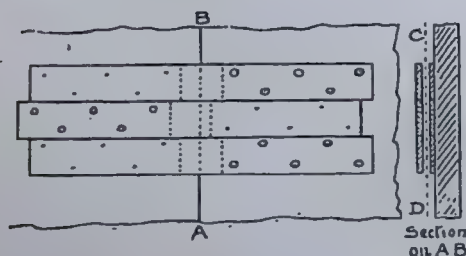
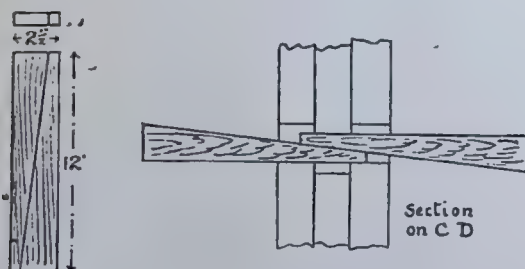
A GATE FASTENING.

tening (A) is suspended from the gate beam by an iron link or chain, fixed in such a way that it will fall forward by its own weight only, while the slope of the catch will force it back and allow the gate to close by itself.

12

A Butt Joint.

To pull up and fix a butt joint in a counter or any similar job, three pieces of deal and two folding wedges are required. The deal pieces should be about 18 ins. long by 2 ins. by 1 in., the wedges (of hardwood) about 12 ins. long, both out of a piece $2\frac{1}{2}$ ins. by $\frac{3}{4}$ in., cut as



shown. A 2 in. by $\frac{3}{4}$ in. mortise is cut in the centre of each of the deal pieces. They are then screwed to underside of counter, through circled holes, keeping the centre piece back as shown in diagram. The hardwood wedges are then inserted and the joint pulled up. The other screws can then be put in, giving a very firm job.

18

Aluminium Gas Lamps.

Aluminium is now being used extensively in the manufacture of gas lamps. This metal is easily spun and worked into any shape desired, and is said to be proof against damage from ordinary gas fumes.

How to Make Toy Cart Wheels.

A series of wheels for toy carts and similar articles can easily be made in the lathe by first turning up a piece of hard wood as A, and then boring a hole lengthways through the wood (B) of which the wheels have to be made, to fit the wood already turned up.



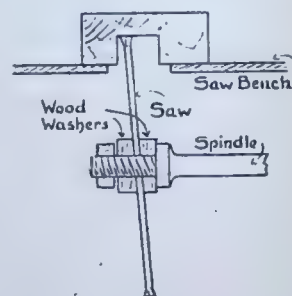
The one is now forced on the other, turned to the size required, and cut down into the mandril with a parting tool. The illustration shows a section of the wheel and mandril.

16

The Use of a "Drunk" Saw.

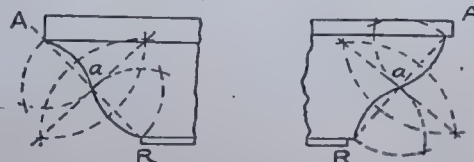
The "drunk" saw is a very handy device in small pattern and joiner shops where only the ordinary wood-working machines are kept. Of course it can only be made use of with a circular saw which has an arrangement for adjusting the height of the blade above the saw bench. Make two washers of oak, or some other hard wood, each having a straight face and an inclined one which gives the saw the necessary throw (see sketch). First slip one of the wood washers over the spindle, putting the straight face against the shoulder, then slip on the blade which goes against the inclined face of the washer. Put on the other wood washer and screw up the nut. Try the saw on a piece of scrap wood first to make sure that it cuts the groove the proper width. The saw can be adjusted by altering the angles on the washers. The writer has cut grooves $\frac{3}{4}$ in. wide and 1 in. deep on pitch pine logs 20 ft. long with a "drunk" saw.

17



Method of Setting Out Ogee Mouldings.

The following method of obtaining the shape of an ogee moulding will be appreciated by those who are somewhat shaky in freehand drawing. Set out the full width of the mould and join the two points from which the moulding springs (see dotted line, A R).



Bisect the line A R. With centre R and radius a , describe an arc; then, with centre a and radius $a R$, again describe an arc. Where these arcs cut each other the centre is obtained for striking half the contour of the mould. Repeat as shown in sketch to obtain the top half of the moulding.

2

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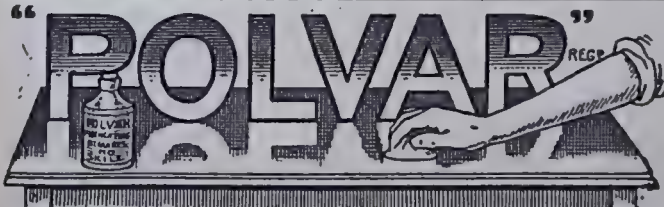
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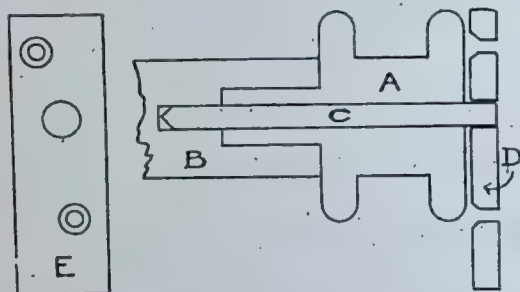
THE STANDARD CHEMICAL CO., Dept. 19 Gray's Inn Road LONDON, W.C.

Always mention "The Woodworker" when writing to Advertisers.

HOW TO DO IT (Contd.).

Improved Roller Ends for Sun Blinds.

Any one who possesses a lathe, and can use it, may, by turning up roller ends in hard wood to the section shown here, improve on the usual metal ends. The end itself is marked A; the roller is shown at B, while C is the iron pin which forms the spindle, and D the



iron bearing in which the spindle runs. The end is fixed to the roller with a solid pin turned on it, and may be either glued or screwed, the spindle passing through both. The bearing is shown flatways at E. The turned piece for the opposite end of the roller will only need one flange, the two on the end shown being for the cord to work in.

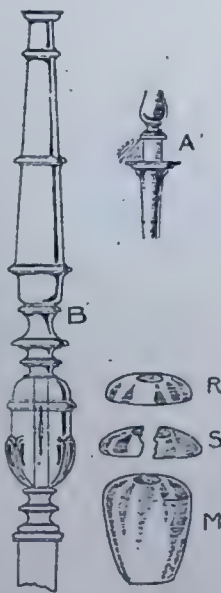
7

Walnut Stain.

A good black walnut stain for whitewood is said to be as follows:—To one gallon of shellac add one pound of dry burnt umber, one pound burnt sienna, and four ounces of dry lamp black. First mix the pigments together by sifting them. Use very thin shellac. Apply one coat, and when dry smooth with fine sandpaper; then apply one coat of shellac or varnish, as may be desired. As umber alone, or in connection with burnt sienna, gives a good walnut colour (Vandyke brown giving a black walnut), these pigments are the most convenient for ordinary staining, and may be mixed either with water or oil.

Lacquering Brass.

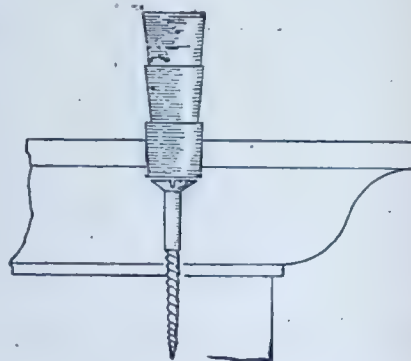
Fretted brasswork is usually lacquered. A sixpenny bottle of pale gold lacquer may be bought, the liquid being applied as a varnish with a small flat camel-hair brush. Lacquer has to be applied sparingly, the brush being drawn quickly over the metal which, needless to say, must be entirely free of grease or dust. It is a good plan to slightly warm the metal before applying the lacquer. The first coat must be perfectly set before a second one is applied; and if by any mischance a mistake has been made, the lacquer should be removed with spirits, thoroughly cleaned, and a fresh coat given.



JOINING PILLARS.

Pelleting.

Where it is necessary to screw capping or similar mouldings on polished articles the method known as pelleting is greatly to be preferred to that of stopping up the holes with cement, beeswax and resin, or similar substitutes. A hole of suitable size is bored in the capping and, after the screw has been inserted, the hole is filled up with a wooden pellet. The pellets should be turned up in the lathe and



may be made in any convenient length, the grain, of course, running in the direction indicated in the sketch. The pellet is glued and driven in the capping mould, then sawn off and levelled up. One of the chief advantages of this method is that shrinkage, such as obtains when cement, wax, putty, litharge, glue and whiting, &c., are used, is reduced to a minimum and a much more workmanlike finish is obtained.

1

Joining up Sideboard Pillars.

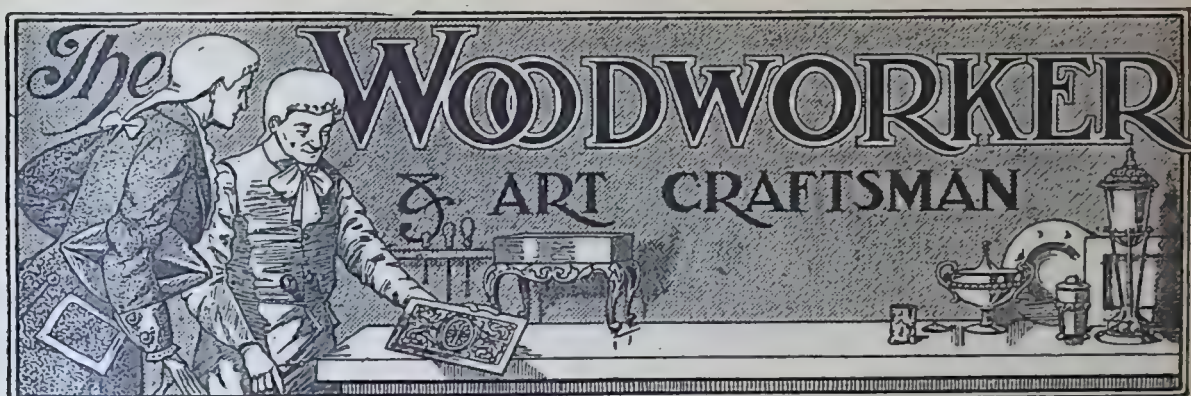
Frequently we come across sideboard pillars which are Queen Anne legs or similar lathe work in which we have large bulbous forms about twice the diameter of the turning proper. It is a difficult and expensive matter to obtain timber sound enough to enable this class of work to be wrought from the solid. Here is a satisfactory way of jointing up turning of this description. Take pillar B for instance. The top and bottom shaft are turned separately, leaving an inch dowel pin of convenient length. A piece of timber of sufficient size is now taken and a hole bored through it endways of the grain. This block is turned up on an arbor or pin to the required length and shape. The arbor is now withdrawn, and the pillar glued up with the aid of a joint, or, as they are sometimes called, a "dowel screw." A large swell such as M is glued up in a similar manner previous to carving the reeds or flutes thereon. At A is shown another method; the shaft is turned up in one piece, and recessed at A, leaving a one-inch pin. The swell, R, is turned up separately on an arbor and then split as shown at S. The split portion, S, is now glued around A, and the fracture which follows the irregularity of the grain of the wood will be most difficult to find.

4

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SUGGESTIONS FOR CHRISTMAS.

MAKE THESE USEFUL GIFTS FOR YOUR FRIENDS.

CHRISTMAS will have come and gone in less than eight weeks. Too often the question of selecting an appropriate gift for relative or friend is put off till the last moment, and a hurried purchase made of something that may appeal strongly neither to giver nor receiver. It is the gift that is most desired that is most welcome, and unless we are children the useful present is more acceptable than the mere ornament.

Home Made Presents.

Woodworkers and other craftsmen have peculiar opportunities and facilities for making useful articles for their friends, and of all Christmas gifts perhaps the most prized is a neat and serviceable piece of furniture that will enrich the home. It is with this in view that we devote these first few pages to suggestions for Christmas. The six articles illustrated are all inexpensive to make; they are graceful in design, simple in construction, whilst each is eminently useful in its own particular way. Many readers will doubtless wish to make one or other of these ornaments for their own homes; many will make them for friends. Wherever they go they will brighten some corner, adding a little bit of furniture that everyone will admire.

May it just be said at the outset that, in the

selection of wood and the consideration of finish, the destination of the article should be kept in mind. If for one's own home there is no difficulty in this; if made as a gift for a friend the wood should, if possible, be chosen to agree with the probable surroundings of the article when given its selected place of honour.

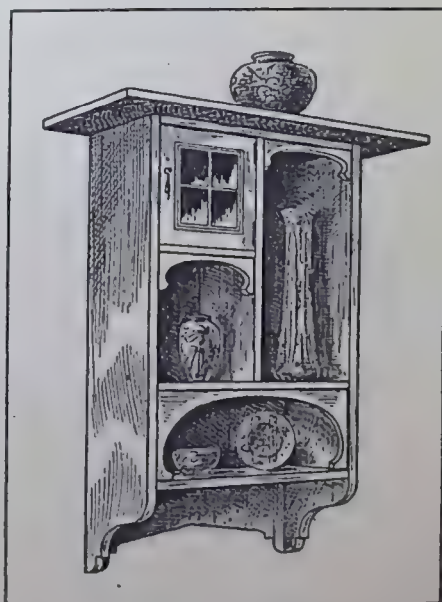


FIG. 1.—FOR A CHRISTMAS PRESENT.

An exceedingly neat Wall Cabinet, 24 ins. high by 18 ins. wide, suitable for sitting room or bedroom. For detailed description see next page.

The Six Designs.

The first of the articles (illustrated here) is for a neat bric-a-brac wall cabinet, one that may be used for drawing-room, dining-room or bedroom. Another is for a smoker's table; a third for a plant stand. Hanging bookshelves, of the favourite panel type, form a fourth subject, whilst the other two are for an ornamental picture frame and a hall or shaving mirror. In only two cases are mouldings introduced, and in no instance is a troublesome joint encountered. The work is plain cabinet-making throughout, and, granted free evenings, all six articles could easily be completed by the careful worker in time for Christmas.

Readers who are woodworkers by profession will find that neat ornaments such

as we illustrate will readily attract purchasers.

For next month's issue we have in preparation a series of attractive designs for home-made Christmas toys.

CHARMING WALL CABINET.

A SUGGESTION FOR CHRISTMAS.

THIS hanging cabinet, a perspective sketch of which is given on the previous page, may be carried out in walnut, mahogany, oak or satin walnut. In total height it is only 24 ins., the carcase width being $13\frac{3}{8}$ ins. The top is 18 ins. by 7 ins., and the various divisions are of suitable size for china or other little ornamental

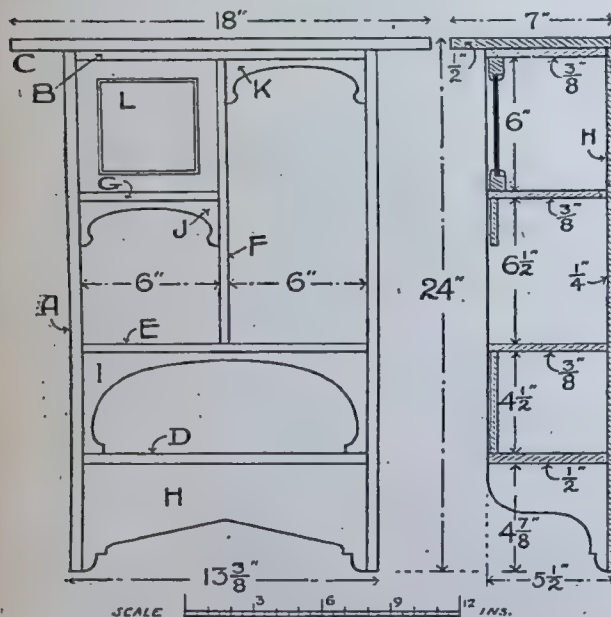


FIG. 2. WALL CABINET. FIG. 3. ELEVATION AND SECTION.
(See Perspective Sketch on previous page).

items. The upper right hand space will be useful for half-a-dozen nicely bound books. The parts required are these:—

	Long. ins.	Wide. ins.	Thick. in.
A. Two Ends	23 $\frac{1}{2}$	5 $\frac{1}{2}$	$\frac{1}{2}$
B. Carcase Top	13	5 $\frac{1}{2}$	$\frac{1}{2}$
C. Top	18	7	$\frac{1}{2}$
D. Lower Shelf	13	5 $\frac{1}{2}$	$\frac{1}{2}$
E. Middle Shelf	13	5 $\frac{1}{2}$	$\frac{1}{2}$
F. Upright Partition	13 $\frac{1}{4}$	5 $\frac{1}{2}$	$\frac{1}{2}$
G. Cupboard Bottom	6 $\frac{1}{2}$	5 $\frac{1}{2}$	$\frac{1}{2}$
H. Back	23 $\frac{3}{8}$	13	$\frac{1}{4}$
I. Shaped Arch	12 $\frac{3}{8}$	4 $\frac{1}{2}$	$\frac{1}{2}$
J and K. Two Shaped Pieces—	6	2	$\frac{3}{8}$
L. Two Stiles and Two Rails			
each	6	1	$\frac{1}{4}$
Door Panel or Leaded			
Light, about	4 $\frac{1}{2}$	4 $\frac{1}{2}$	

As all sizes are practically net, a little extra should be allowed in length and width when ordering.

A brief description of the parts will explain the construction.

ENDS (A).—These may finish $\frac{1}{2}$ in. thick, and require to be 23 $\frac{1}{2}$ ins. by 5 $\frac{1}{2}$ ins. wide. At the lower end they are shaped as indicated in Fig. 3, whilst the upper edge has two dovetail slots cut to receive the carcase top (B). The inner sides are grooved for the shelves, the grooves being stopped about $\frac{1}{2}$ in. from front edge to mask the joint. It will be better if the grooves for lower shelf (D) are dovetailed, but as there is no heavy strain on the cabinet this is not essential. For the other shelves simple housing grooves will do. The back edges of ends will be rebated $\frac{1}{4}$ in. the whole way down to take the back (H.)

THE CARCASE TOP (B) may be $\frac{3}{8}$ in. thick. As the back (H) will be nailed over it, the width need only be 5 $\frac{1}{2}$ ins. It will be dovetailed slotted to ends, and to allow for this a length of 13 ins. may be allowed.

THE TOP (C), 18 ins. by 7 ins. and $\frac{1}{2}$ in. thick, is glued and screwed to the carcase top from below.

LOWER SHELF (D) is $\frac{1}{2}$ in. thick; the other shelves (E and G) need be only $\frac{3}{8}$ in. thick. In each case the depth is 5 $\frac{1}{2}$ ins., and all are housed in position, the shelves being cut back at front to correspond with the grooves in ends (A) and partition (F).

THIS PARTITION (F) is housed to C and E, and will be grooved to take the cupboard bottom (G). It will be noted that the carcase top, partition and three shelves come flush with front edges of ends.

BACK (H).—This may be of $\frac{1}{4}$ in. wood, shaped at the foot as in Fig. 2. The back lies in the rebates cut in the ends, and may be nailed to back edges of shelves, etc.

THE SHAPED PARTS (I, J and K) are all of $\frac{3}{8}$ in. wood. They stand in about $\frac{1}{4}$ in. from edges of ends and shelves, and may be glued and further held with narrow glued blocks fitted in behind.

THE DOOR (L), 6 ins. by 6 ins., stands back $\frac{1}{4}$ in. and may be framed up of 1 in. by $\frac{3}{8}$ in. stuff, finished plain or with a simple bead. It will be rebated for a wood panel or a tiny leaded light. The door is hung with a pair of brass butts, and should have a small catch. An inside stop must also be provided.

A cabinet of this character may be made in a larger size if desired. The shelf arrangement, too, may be varied. For example, the cupboard may be dispensed with. Or the partition (F) and shelf (G) may be omitted, and the upper part be given an arch like I, but with its sides finishing like J and K. If a pair of cabinets are made some variation of this sort is recommended.

An oak cabinet may be wax polished. Walnut may be oiled and finished semi-dull with ronuk. Mahogany and satin walnut look better if French polished. The cabinet will be hung by means of two or four brass plates.

SMOKER'S TABLE AND PLANT STAND.

SUGGESTIONS FOR CHRISTMAS (Contd.).

HERE, again, in Fig. 4, is shown a graceful little table which will be found useful even in homes where the consumption of tobacco may not be an hourly practice. For the occasional cup of tea, or as a handy table at the side of one's arm chair, it is just the item of furniture that every house needs. Standing at a convenient height, 26 ins., it has a top 10½ ins. square. There is a light shelf below, and the whole article with its tapering legs has a dainty appearance when finished. The few parts required are these, the sizes given being practically net. For lettered diagrams see next page

	Long.	Wide.	Thick.
	ins.	ins.	ins.
A. Top ..	10½	10½	1½
B. Four legs ..	26	10½	1½
C. Four top rails ..	6½	10½	1½
D. Shelf ..	7½	7½	1½
E. Three rails ..	8½	7½	1½

THE TOP (A, Fig. 6) may finish ½ in. thick. The upper edge may be quite plain, but a lighter effect is obtained by running a chamfer all round. The under side should have four shallow mortises carefully cut to receive short tenons (on the legs.

LEGS (B).—Allowing for ¼ in. tenons at the top ends, the legs may be cut 25½ ins. net. They are ¾ in. square at the top, tapering to ½ in. square at the floor. The taper, it may be noted, should be on the two inner faces only; this gives a better appearance and simplifies the work. The legs will be mortised for the top rails and notched for the shelf. They will also be mortised on one face for the lower rails.

TOP RAILS (C).—From the plan at Fig. 7 it will be seen that the width over the legs at the top is 7 ins. The rails (1½ in. wide and ¾ in. thick) will

therefore be prepared to suit, with tenons to enter the legs. An enlarged section is shown at Fig. 8.

At the floor the legs splay out to 9½ ins. over all each way (see Fig. 6), and it will be found easier to secure them in this position to a waste board while the rails, etc., are being adjusted.

THE SHELF (D) stands in about ½ in. from outer faces of legs. In size it will work out at 7½ ins. or 7½ ins. square, and it should finish ¾ in. thick. It is notched and glued into the legs as shown at Fig. 8, a indicating the notch cut from corner of shelf. This part of the work must be done very neatly. If the joints are tight glue will afford an adequate hold, but if necessary a fine screw may be driven in aslant from below.

RAILS (E).—In the perspective sketch, Fig. 4, two cross rails and one stretcher rail are shown, but if desired four cross rails may be used. The former arrangement is preferable. The rails may finish

¾ in. by ½ in., and in length must be cut carefully to a fit. The cross rails are tenoned to the legs, the stretcher rail being tenoned to the two cross rails. The tenons must be tight and should be well glued in.

The top is glued on, and is held either by glued blocks fitted around inside, or by screws passed through the rails by means of thumb slots.

Oak is the best wood to use. The most effective finish is by fuming and wax polishing. A polished walnut table will also look well.

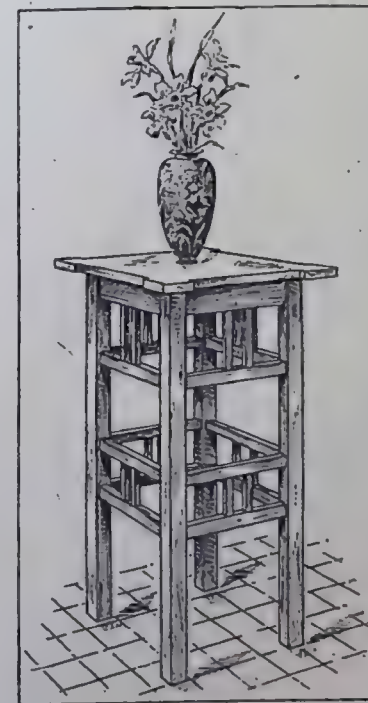


FIG. 5.—USEFUL PLANT STAND.
20 ins. high by 10½ ins. over Top.

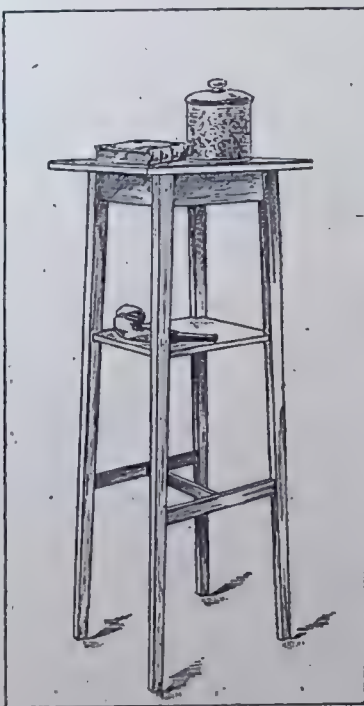


FIG. 4.—SMOKER'S TABLE.
26 ins. high by 10½ ins. over Top.

If a slightly larger table is wanted it is not necessary to increase the height. The top might, for an occasional tea table, be increased to 12 ins. or 15 ins. square, or a useful size is 16 ins. by 12 ins.

The construction of the plant stand (Fig. 5) is described on the next page.

SMOKER'S TABLE AND PLANT STAND.

SUGGESTIONS FOR CHRISTMAS (Contd.).

FOR a plant stand—which might in emergency be used for afternoon tea purposes—a neat little article on the lines of Fig. 5 (shown on the previous page) will form a most acceptable Christmas present. The height is 20 ins., the top 10½ ins. square over the projecting corners, and the width over the legs 8 ins. The rails and slots

must also be mortised for the rails, C, D, E and F. THE TOP (B), finishing ½ in. thick, is 10½ ins. square, but is cut with projecting corners as shown in the part plan *a* at Fig. 9. The corners may be 2 ins. each way, with a break of ¼ in. Shallow mortises will be cut in the underside to take the legs.

RAILS (C, D, E and F) show 6 ins. between the legs, but in each case extra must be allowed for tenoning. The top rail (C) is 1½ in. wide by ½ in. thick, the others finishing ½ in. square. All rails must be mortised on one edge for the slats.

THE SLATS (G and H) should finish ½ in. wide by ¾ in. thick. The upper ones show a length of 3 ins. between the rails and the lower ones 2 ins. All must have short tenons, or if preferred they may be dowelled to the legs. The slats stand an inch apart.

The rails stand in ½ in. from face of legs, and the slats ½ in. from face of rails. There are no difficulties in putting the stand together, but neatness is required in fitting the rails and slats. The real secret, of course is in the careful marking of sizes.

The top is glued in position and is further held with glued blocks, two at each side. If the top rails (C) are cut ¾ in. thick the top may (instead of using glued blocks) be screwed through the rails by means of thumb slots.

Placed at a window this plant stand should form one of the most attractive ornaments of furniture in the room.

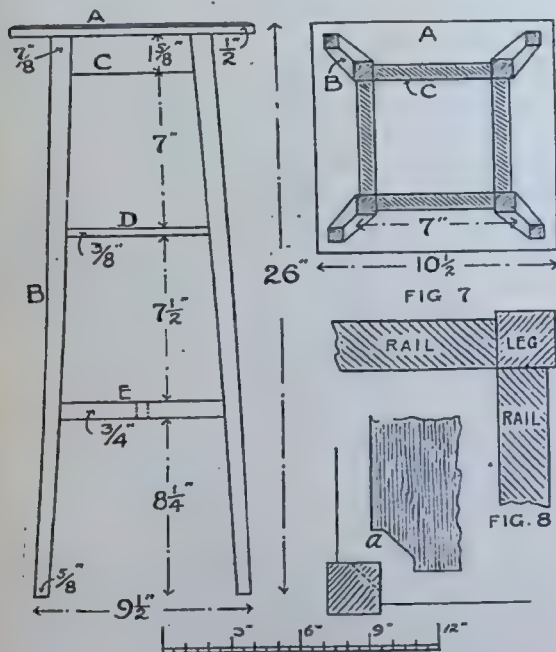


FIG. 6.—SMOKER'S TABLE—ELEVATION. FIG. 7.—PLAN. FIG. 8.—SECTIONAL DETAILS. (For description see previous page—Fig. 4.)

give a fair amount of work with the chisel, but the arrangement is remarkably effective and well worth the effort. Referring to Fig. 9, the various parts are these:—

	Long.	Wide.	Thick.
	ins.	ins.	in.
A. Four legs	19½	1	1
B. Top	10½	10½	½
C. Four top rails ..	7½	1½	½
D, E, F. Twelve rails ..	7	½	½
G. Eight upper slats ..	3½	½	¾
H. Eight lower slats ..	2½	½	¾

These sizes, including tenons, are net, so in ordering a little extra must be allowed for paring. Oak is the best wood to use, but any other hardwood may be taken if a strict match seems essential.

THE LEGS (A, Fig. 9), 1 in. square throughout, should have short tenons to enter the top. They

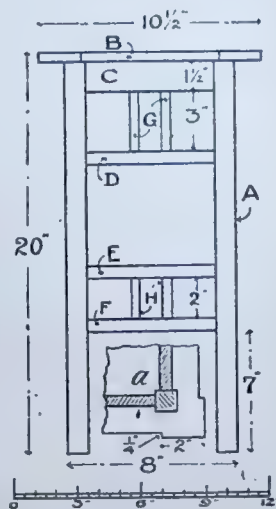


FIG. 9.—PLANT STAND—ELEVATION AND DETAIL. (See Perspective Sketch on previous page—Fig. 5.)

Veneering and Marquetry Cutting.

A knowledge of the more general methods of veneering work is of great value to the woodworker. THE WOODWORKER Sixpenny handbook, "Veneering, Marquetry and Inlay," by Percy A. Wells, gives full instructions for cutting, laying and jointing veneers for the treatment of curved work, for cross-banding, stringing, etc. Inlaying with veneers is dealt with, and there is a chapter on metal, pearl and wax inlaying, and others on marquetry, intarsia and marquetry. The handbook is one of about 80 pages. There are 37 illustrations, and a study of the little volume will do much towards leading the craftsman into new and interesting avenues of work. Price Sixpence, or post free for Sevenpence, from EVANS BROS., LTD., Sardinia House, Kingsway, London, W.C.

PANEL BOOKSHELVES.

IDEAL FOR THE COSY ROOM—CHRISTMAS SUGGESTION. (Contd.)

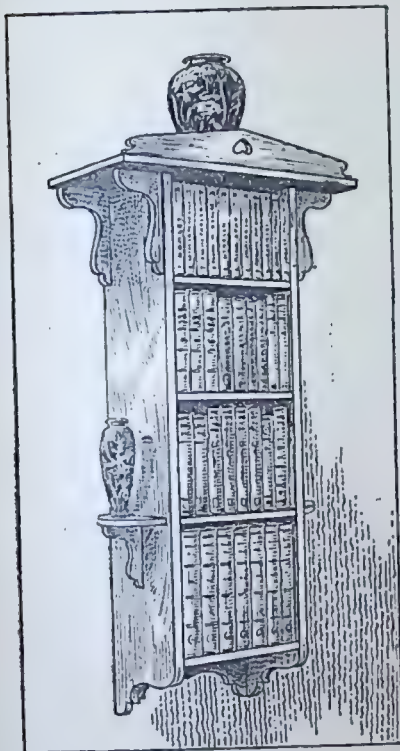


FIG. 10.—PANEL BOOKSHELVES.
Size 36 ins. by 17 ins. over Top.

upper brackets give just the little touch of variety that the article needs.

Like all the other items of furniture described in these Christmas suggestions, the cost of wood is here trifling, whilst the bookshelf is perhaps the easiest of all to construct. Its usefulness as a gift can hardly be questioned. The parts are these:—

	Long.	Wide.	Thick.
	Ins.	Ins.	In.
A. Two ends	33½	6	1
B. Top	17	7	1
C. Lower shelf	8½	5½	1
D, E, F. Three shelves	8½	5½	1
G. Back	30½	8½	1
H. Pediment	16	2½	1
I. Four shaped brackets	6	3½	1
J. Two side shelves	5	3	1
K. Two shelf brackets	4	2½	1
L. Apron piece	8½	3½	1

In ordering some allowance must be made for cutting, as the sizes given are practically net.

ENDS (A) are shaped at the foot as at Fig. 12. The upper edges will be housed to the top (to

OF bookshelves there is an endless variety but for filling an odd corner of some parlour or bedroom wall nothing is more pleasing than a set of shelves of the neat "panel" type. The case width of the shelves shown in Fig. 11 is 9 ins., the four spaces being arranged to suit books from crown 8vo. to the neat pocket edition size. The top shelf has a width of 17 ins., and the total height over pediment is 36 ins. The shaped ends, the side shelves and the

which the ends may afterwards be screwed from above), and the inner sides are grooved to take the shelves. The grooves for lower shelf (C) should be cut for dovetail housing, in order to bind the whole well together below. Grooves in each case will be stopped about ½ in. from front edge to mask the joint. The back edges will be rebated to take the ¼ in. back (G) and the ¾ in. apron piece (L).

THE TOP (B) is 17 ins. by 7 ins. and finishes ½ in. thick. At the front it overhangs an inch, and at each side 4 ins. It is holed for dowels

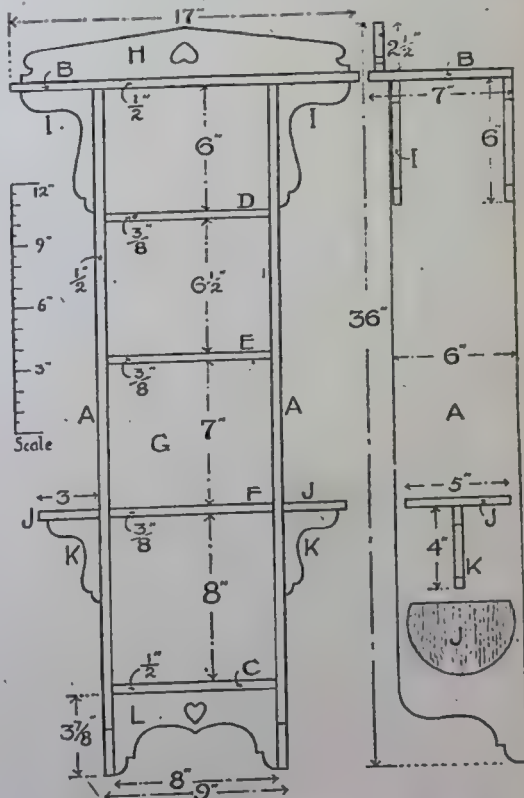


FIG. 11.—PANEL BOOKSHELVES.
FRONT ELEVATION.

FIG. 12.
END VIEW.

to take the pediment in front, and grooved for the housing tenons of the ends. These grooves will of course be stopped back 1½ in. or so from front edge. The top is glued and screwed down to the end.

SHELVES (C, D, E and F). The lowest shelf (C) should finish ½ in. thick, but the other three may be ¾ in. All are housed to the ends (C preferably dovetail-housed), the shelves being cut back ¼ in. from the front to correspond with the grooves. In front the shelves are flush with

How to Make a Toboggan—See December Issue.

SUGGESTIONS FOR CHRISTMAS.

PANEL BOOKSHELVES (Contd.).

the ends; behind they will come in $\frac{1}{4}$ in. to allow for the back. If economy is a consideration, the shelves may be of stained whitewood, faced with a $\frac{1}{4}$ in. strip of hardwood.

THE BACK (G) may be of $\frac{1}{4}$ in. whitewood, stained to match the hardwood used otherwise.

PEDIMENT (H). This is 16 ins. by $2\frac{1}{2}$ ins. by $\frac{3}{4}$ in. or $\frac{1}{2}$ in., shaped and pierced as indicated. It is dowelled to the top about $\frac{1}{4}$ in. from front edge; or, instead of dowelling, it may be held with glued blocks fitted in behind. A block, 8 ins. long, may also be fitted to secure the back to the top.

THE BRACKETS (I and K) should finish not less than $\frac{3}{4}$ in., and are glued and either dowelled or screwed in position. The front top brackets

(I) stand back $\frac{1}{4}$ in. from edge of ends.

SIDE SHELVES (J) are described with a $2\frac{1}{2}$ ins. radius, but are kept 3 ins. wide as shown in the little inset diagram of Fig. 12. Their position corresponds with shelf A, and they may be dowelled or screwed on before shelf F is fixed.

THE APRON PIECE (L), shaped as shown in Fig. 11, is rebated to the ends.

The various shaped parts may easily be drawn full size from the scale diagrams given, but care should be taken to have spirited curves. The fitting together of the parts is simple throughout, but it is important to have the top and the lowest shelf well secured to the ends. The finished article will be hung to the wall by means of four stout brass plates.

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A NOVELTY IN PICTURE FRAMES.

THE picture frame shown here (Fig. 13), carried out in oak or dark walnut, will make a most acceptable gift, especially if fitted with an appropriate autotype, photograph, etching, photograph or coloured print. It presents no difficulty, and if the worker is unable to run his own moulding he will easily be able to procure a suitable length from the local cabinet maker. The material required is as follows, the sizes being net finished:—

	Long. ins.	Wide. ins.	Thick. ins.
Two Stiles	12 $\frac{3}{4}$	2	$2\frac{1}{2}$
Top Rails (Shaped)	18	$2\frac{3}{4}$	$2\frac{1}{2}$
Bottom Rail Shaped)	18	$2\frac{3}{4}$	$2\frac{1}{2}$
Top Moulding	26	$2\frac{1}{2}$	$1\frac{1}{4}$
Two Brackets	5	$2\frac{1}{2}$	$1\frac{1}{4}$

THE FRAME proper is 18 ins. wide by $13\frac{1}{2}$ ins. high, the sight size coming out at 14 ins. by 10 ins. The upper rail is $1\frac{1}{4}$ ins. wide at the centre, the lower one (like the stiles) being 2 ins. wide the whole length. The curves are taken with a 30 in. radius for the inner lines, and a 32 in. radius for the outer line of lower rail. The rails should be tenoned right through the stiles, and rebates will be cut behind for the picture, which will be framed up with a back board in the usual way. Framing to finish $\frac{1}{4}$ in. thick will do. As shown, it is flat; the rebate must therefore be cut to leave a lip of not more than 3-16 in., so that the picture may not be too deeply recessed.

THE TOP MOULDING, 26 ins. long over all, will be glued and screwed down to the frame from above. A little groove may be run along the top in order to provide a shelf for plates, etc.

AS THE BRACKETS should stand back about $\frac{1}{4}$ in. from face of frame, a thickness of $\frac{3}{4}$ in. will do for these. The shaping may be taken from the

An ornamental frame of this character is a great improvement on the ordinary rectangular picture frame. Fixed to the wall above a mantel-

shelf or cabinet it will make a most welcome addition to any room. The cost and labour of making are alike inconsiderable.

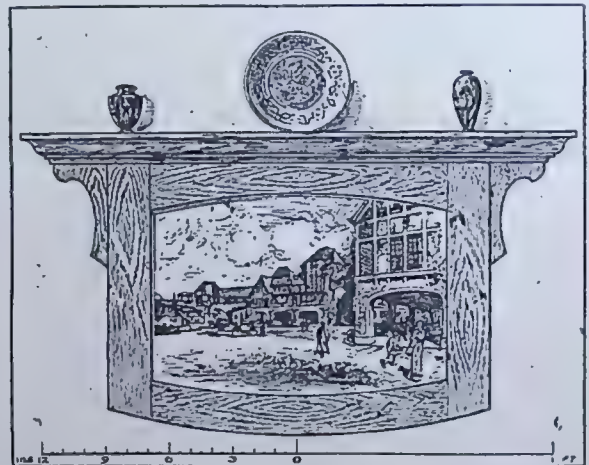


FIG. 13.—PICTURE FRAME, 26 INS. BY 15 INS.

We shall at any time be glad to hear from readers who make up these useful designs and to receive photographs of the finished articles.

84

SUNDERLAND ARTS AND CRAFTS.—The triennial exhibition of the Sunderland Association was held from 13th to 18th October, and the quality of work showed a great advance on previous displays. A noteworthy feature was the demonstration by local craft workers. In wood carving the first prize was secured by Miss Gladys Forge, for a panel, excellent in both design and workmanship. In the hand-made jewellery section the prize was given to Mr. Davies, of Birmingham. Needlework was again a prominent feature of the exhibition.

AN ARTISTIC MIRROR.

DIGNIFIED AND USEFUL—CHRISTMAS SUGGESTIONS (Contd.).

IN designing this wall mirror (Fig. 14) several purposes have been kept in view. In the bedroom or bathroom a shaving glass is always useful. In the hall a small mirror, near the door in a good light, is a welcome addition, especially when the hall stand is placed (as it often is) in a dark corner. Then, in the sitting room or drawing room an attractive mirror,

order to secure an adequate recess for the mirror. By taking only $\frac{1}{4}$ in. wood for the mirror panel (J), however, and by using a very thin backboard (say $\frac{1}{8}$ in.), the framing may be kept down to $\frac{3}{4}$ in.—an advantage if a light sitting room ornament is wanted.

The construction calls for little remark. The stiles (A, Fig. 17) taper on the outside from 2 ins.

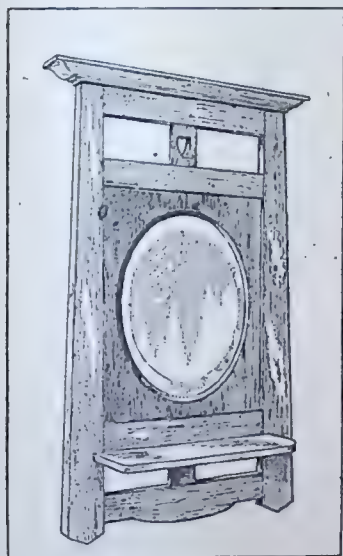


FIG. 14.—ARTISTIC MIRROR FRAME, 22 INS. BY 17 INS.

either of the same wood or of dark walnut. Mahogany, French polished, will look equally well, or walnut may be taken to match existing furniture. The few parts required are as follows, sizes being practically net:—

	Long.	Wide.	Thick.
	Ins.	Ins.	In.
A. Two stiles	21	2	1
B. Top rail	13½	1½	1
C. Bottom rail	15	2	1
D, E. Two intermediate rails	13	1½	1
F. Pierced panel	2	2	1
G. Lower panel	1½	2	1
H. Shelf	12	5	½
I. Capping	17	2½	1
J. Mirror panel	11½	11½	¾
K. Circular mirror, with bevelled edge	9½ diameter.		
L. Four framing slips (white-wood)	11½	1	¾
M. Backboard (whitewood)	11½	11½	¾

A thickness of 1 in. is allowed for the framing in



FIG. 15.—SECTION, SHOWING METHOD OF FRAMING THE GLASS.

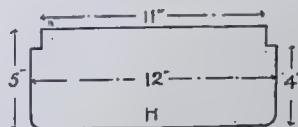


FIG. 16.—PLAN OF SHELF, WITH SIZES.

with shelf, is frequently wanted as an ornament. For all such purposes this design is appropriate.

The frame may be carried out in oak, the inner panel being

at the foot to 1½ in. at the top, the lower ends being pointed. To these the rails (B, C, D and E) are tenoned; B and C may

be tenoned right through if thought necessary. The lower rail (C) is shaped as indicated. The panels (F and G) may be simply glued in position, F having a little heart pierced as shown. The shelf is shown in plan at Fig. 16. It may finish ½ in. thick, and is screwed to rail E.

The stiles (A) and rails (D and E) will be rebated as section, Fig. 15, to take the mirror panel (J), which must be cut with a circular opening 9 ins. in diameter, the edges of this being chamfered. To hold the mirror four fillets (L) may be fitted behind the panel (J), and a backboard (M) screwed on. The capping (I), with the ends returned in the solid, is glued and screwed down. 84

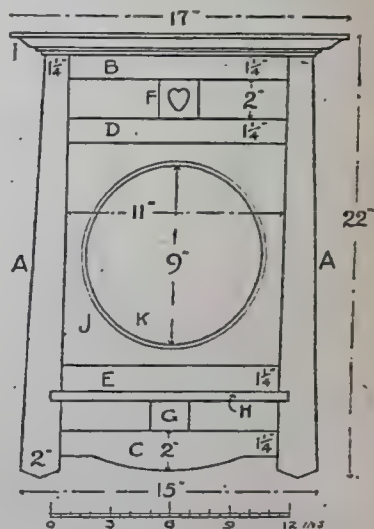


FIG. 17.—ELEVATION, WITH DIMENSIONS AND SCALE.

WRITE FOR PARTICULARS.—Books on handicraft, which emphasise the artistic as well as the instructive side are of great value, and for this reason we welcome "Handicraft in Wood and Metal," by John Hooper and Alfred J. Shirley (Batsford, 7s. 6d., net.). Messrs. Batsford, 94, High Holborn, London, W.C., have offered to send an illustrated prospectus of the book to any reader of THE WOODWORKER.

For Special Offer of Free Designs See Page 328.

HOW TO REPAIR BROKEN OR FAULTY WHEELS.

WHEELS AND WHEEL MAKING—VII.

TO know how to make a new wheel is interesting; to know how to repair a broken or faulty one is essential. Thus our concluding chapter must be on the actual replacing of broken parts—work that, at some time or other, is likely to fall to the lot of almost every reader.

Repairs which are needed to wheels are (1) the insertion of new spokes, and (2) the replacing of broken or worn-out felloes. The former may be the simple task of putting in one new spoke only, or the more difficult one of inserting several. If one only has to be inserted, it cannot very well pull the wheel out of shape, even though it is not fitted quite so well as it should be; but when several new spokes have to be put in, faulty fitting will pull the wheel into any shape except the one it should take. Again, in repairing the felloes, only one or all may require to be new. This latter is called "new ringing" the wheel, and, providing the spokes are good, makes what is practically a new wheel.

Removing Broken Felloes.

In Fig. 1 we show a wheel with two broken felloes. The one would be caused through faulty wood being used in the first instance; having-given way, it has split off the cross grain at the dowel, not only on itself but also on the adjoining felloe. In a case such as this there is nothing for it but to put in two new felloes, and the safest way to remove the old ones is to saw them through at either side of the spokes and split them away.

Even with the exercise of the greatest care in the removal of the old felloes, the points of the spokes will often be found broken, as at A in Fig. 2, and if this is the case they should always be replaced with new. Occasionally the spokes will be found fractured, as at B in Fig. 2, in which case it can be put down to bad work when the wheel was made. The cause may be bad mortising of the hub, necessitating much bending of the spoke when the felloes are put on; this starts a fracture, which is made worse as the wheel is used.

Removing Faulty Spokes.

The old spokes, unless badly fractured, are useful for wedges, pins, etc., and should be withdrawn as nearly whole as possible. Two methods of doing this are shown in Fig. 5. At C the spoke is notched, and by striking smartly in the notch it will come out. At D an iron ring is slipped on to the spoke and wedged tightly; a few additional blows of the wedge will remove the spoke intact.

Fitting New Spokes.

Fig. 4 shows the wheel lying flat with the two faulty felloes; also two faulty spokes removed. The latter should be replaced first, fitting them as nearly as possible like the old ones; drive them in tightly, straightening them at the same time as

when making a new wheel. The making of the tenon and cutting of the shoulder will also be the same—that is, unless the new spoke happens to come so that an old felloe has to fit on it; if so, the tenon must be made so that it will fit the mortise as nearly as possible.

Fitting New Felloes.

Fig. 5 shows the wheel after the spokes have been replaced, ready for the reception of the felloes. These must be cut to the correct radius to suit the height of the wheel, as described before; when they come both together as shown, the fitting in and cutting to length is easy. With care the two felloes may be driven into position with the dowels in place.

Faulty felloes may be found not adjoining each other, as in Fig. 12. If so it is best to remove the wedges in the end of the spokes, so that the intermediate felloe can be drawn off at a certain distance, as in Fig. 11. This will enable us to utilise the dowels, which otherwise would be impossible. In such a case as this the length of the felloes is obtained by laying them on the old ones, as in Fig. 14 (where E E are the new felloes), and squaring them up on the inside and outside, thus getting length and bevel at the same time.

After the felloes are cut to length as above, they can be laid in position on the spokes, when it is easy to mark the places for the mortises. The felloe in position for marking the length is shown in Fig. 6, and for the marking of the mortises in Fig. 7.

Fig. 13 shows the felloes laid on for marking in, where three new ones are wanted, all separated by the old one—a somewhat rare occurrence, but one which may occasionally crop up. Should more than three new felloes be wanted it is usually advisable to "new ring" the wheel.

On referring to Fig. 11, it will be noticed that the dowels in the old felloes are bevelled off from one side; this is done to facilitate the putting together, the sloping off as shown making it much easier to get them to enter the holes in the new felloes.

Fitting a Single New Felloe.

It is often found that one felloe only is wanted to put a wheel in good condition again. To fit this will be easier than to fit two or more as just described; but it will be found impossible to use dowels to join the felloes together in the usual way, unless the other felloes are drawn off partly to allow them to enter, which is not advisable. The way to fix the new to the old in such a case is to either nail or screw; the former is the usual way, but the latter is the stronger and therefore to be recommended. Three nails or screws should be used at each joint, as in Figs. 9 and 10 (nails and

WHEEL REPAIRING (Contd.).

screws respectively), two from one side of the joint and one from the other. Fig. 8 shows both the nailed and the screwed joints sectionally. To obtain the necessary sinking for the screw, a hole some $\frac{1}{4}$ in. in diameter should be bored in the back of the felloe (to the same depth) for each one, the actual screw hole starting diagonally from the bottom of these holes, as in Fig. 8. If nails are used they will sink in the act of driving in.

used, this often being the cause of the splitting off of the corners of the felloes as shown in Fig. 1.

English oak is the best wood to use for spokes, thought at the present time there are large numbers made from hickory. This is of course a foreign wood, and the spokes made from it are purchased ready shaped, a convenience in many respects. These, however, are not so good as the oak, especially for heavy work.

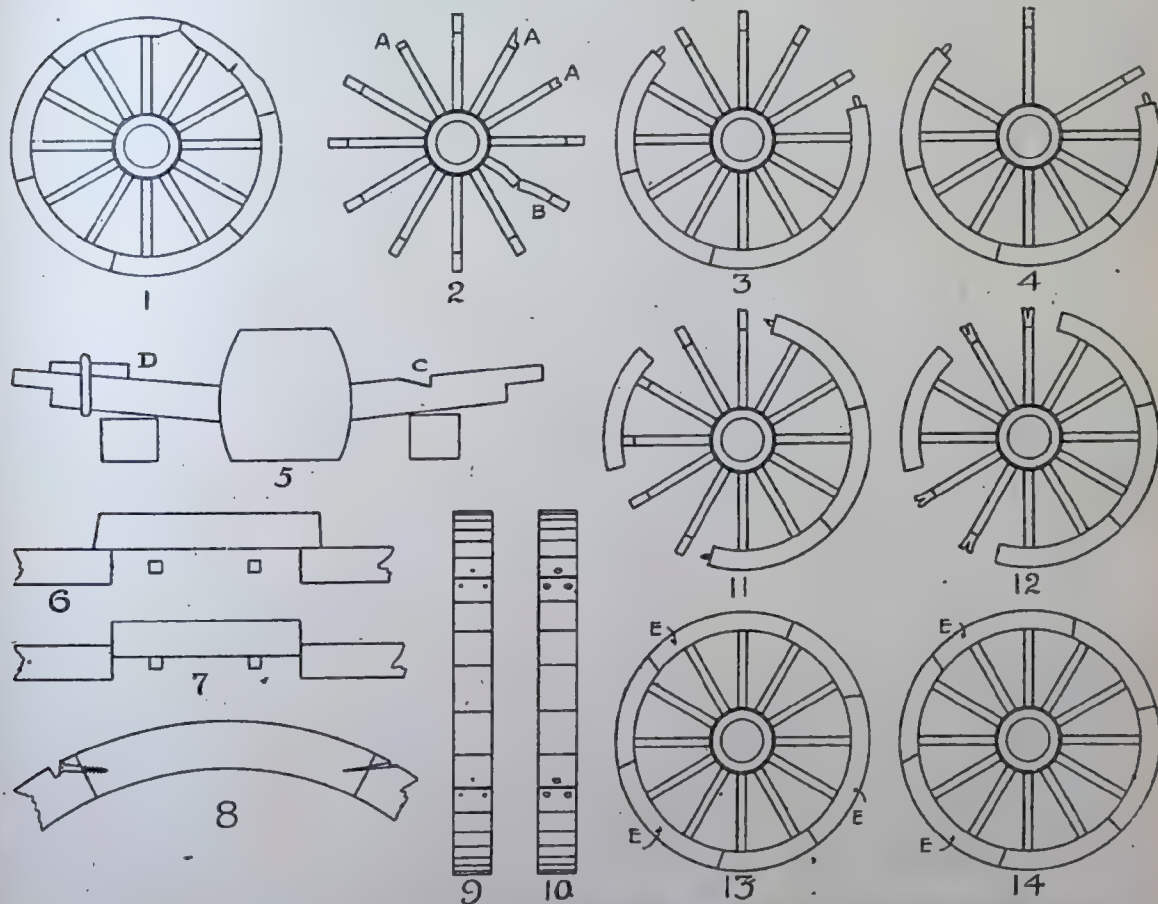


Fig. 1.—Wheel with two broken Felloes. Fig. 2.—Wheel with four broken Spokes. Fig. 3.—Two new Spokes inserted. Fig. 4.—Two Spokes drawn out. Fig. 5.—Two ways to draw out Spokes. Fig. 6.—Side elevation of Fig. 14. Fig. 7.—Marking position of Mortises. Fig. 8.—Sectional detail of Figs. 9 and 10. Fig. 9.—New Felloe fixed with Nails. Fig. 10.—New Felloe fixed with Screws. Fig. 11.—New Felloe partly drawn off to facilitate entrance of Dowels. Fig. 12.—Wheel with two broken Felloes removed. Fig. 13.—Marking lengths of Felloes when three alternate new ones are required. Fig. 14.—Marking new Felloes to length.

Hints on Wood.

The cause of broken felloes is almost invariably unsuitable wood, therefore great care should be used in the selection of this before use either in making or repairing. Both beech and ash are liable to become what is often called "doaty" under certain conditions, and when this state of things commences the timber is unfit for use and must be discarded. Shaky wood must not be

In concluding this series on wheel making, may we add that if there is anything we have omitted, or passed over too lightly, we will remedy this through the Question Box columns. 68

NOTE.—The previous articles in this series on Wheel Making appeared in issues of January, February, March, May, July and September of this year, and may be obtained through any newsagent, price 3d. each, or direct from the Publishers (EVANS BROS., LTD., Sardinia House, Kingsway, London, W.C.), price 4d. each, post free.

See Page 328 for Special Offer to Readers.

THE WOODWORKER PRIZE COMPETITIONS.

PLEASURE AND PROFIT FOR SPARE HOURS.

MONEY PRIZES.

IT is evident from the large number of entries received that our competitions are proving exceedingly popular. Competitors from all parts of the British Isles have sent in either designs for brackets or mortise and tenon joints, and the work is of a very high order, in fact so uniformly good that the awarding of the prizes has been a very difficult task.

We wish to make these competitions still more widely known, because they not only make for greater efficiency in the competitors—thus proving a real help—but they provide the means of profitably and pleasantly spending one's spare hours. We ourselves shall appreciate it if you will introduce this feature to your friends—and they will be grateful to you.

COMPETITION PRIZE AWARDS.

No. 1.—Panelling Problem.

FOR the two best drawings of a panelled frame, the incomplete elevation of which was given in September, the prizes have been awarded as below. In next month's issue we will give, under "How To Do It," particulars as to the correct method of finishing the panel.

FIRST PRIZE, FIVE SHILLINGS.—JOHN T. HALL, 38, Hillcrest Road, Acton Hill, London, W.

SECOND PRIZE, HALF-A-CROWN.—ANDREW J. YOUNG, 18, New Street, Beith, Ayrshire.

HONOURABLE MENTION is given to:—J. J. ELLIS, REGINALD J. ALLEN, J. ACKERS, IOWERTH REES, F. EDWARDS, A. J. SMYTH, ERNEST BENNETT, W. MORGAN, A. J. PADGHAM, S. E. EPTON, C. PRIOR, A. H. STREETS and A. B. HENBEST. 112

No. 2.—What Can be Made from Waste Wood.

Two prizes were offered for the best suggestions as to the use to which a "waste" piece of unplanned deal, 23 ins. long, 11 ins. wide and $\frac{1}{2}$ in. thick, could be put. Many useful suggestions have reached us and the prizes are awarded as follows:—

FIRST PRIZE, FIVE SHILLINGS.—A. J. PADGHAM, 38, South Park Parade, Green Lane, Ilford, for design of a useful Boot Brush Rack.

SECOND PRIZE, HALF-A-CROWN.—C. PRIOR, 65, Mapledene Road, Dalston, London, N.E., for design of a small stool.

SPECIAL MENTION is given to:—G. E. PUNT, S. E. EPTON, J. LINGARD, R. J. ALLEN and ERNEST BENNETT. We hope to include illustrations and particulars of the prize designs in next month's issue. 113

Competition No. 3.—Design for a Bracket.

For the two best designs for a useful bracket shelf, of the selling value of 2s. 6d. (cost of materials not to exceed 1s., and estimated time in making not to exceed 2½ hours), the prizes are awarded as follows:—

FIRST PRIZE, FIVE SHILLINGS.—J. SMITH, 2, Sandown Villas, High Street, Knaphill.

SECOND PRIZE, HALF A CROWN.—J. J. ELLIS, 23, Law Street, Sudden, Rochdale.

HONOURABLE MENTION is given to JAMES FRASER Glasgow.

Competition No. 4.—Mortise and Tenon Joints.

This has proved a very successful competition. A large number of models have been received, much of the work being of a high standard, and the Judges have had considerable difficulty in deciding the order of merit. The awards are as follows:—

FIRST PRIZE, TEN SHILLINGS.—W. BENNETT, 15, Albert Street, Leamington.

SECOND PRIZE, FIVE SHILLINGS.—A. C. PAGE, 21, Gwydir Street, Cambridge.

Owing to the excellent work submitted by two other competitors, special prizes (a Bound Volume of THE WOODWORKER AND ART CRAFTSMAN each), are awarded to:

FREDERICK E. MARTIN, 8, Avenue Road, Southall, Middlesex; and

G. DENYER, The Cross, Warnham, Horsham.

HONOURABLE MENTION:—HERBERT ASHWORTH, Accrington; HUGH HARKNESS, Ballymote (Sligo); J. BAKER, Newcastle-on-Tyne; F. SEDDON, Oban; A. J. PADGHAM, Ilford; T. J. TURNER, Carlisle; JOHN DUNBAR, Kilmainock; J. MACDUFF, Glasgow; R. J. ROBERTSON, Crochandelg (Derry); G. W. NEASHAM, Darlington; A. VOELKEL, Castleford; H. F. GOODWIN, Bangor; ERNEST BENNETT, Derby; ARTHUR LEWIS, Holyhead; G. COOK, Mere; A. J. REES, Manchester; J. H. MILLETT, Macclesfield; LEONARD FERGUSON, Wolverhampton; W. J. ISITT, Newport (Mon.); A. R. CARPENTER, Kirkcaldy; S. DARLINGTON, Junr., West Bromwich; SAMUEL E. HOWSE, Derby; JAMES N. NAVIS, Batley; C. WOOD, Cheslyn Hay; ALFRED HEARN, Bolton; J. H. STOKES, Cheslyn Hay; H. W. PINDER, Retford; E. J. OKEY, Northampton; J. KERSHAW, Wigan; B. S. CARTWRIGHT, Stratford; D. W. E. THOMSON, Junr., Sidcup; J. JENNINGS, Tottington; A. C. STEVENSON, Liverpool; J. GOODE, Shrewsbury; J. S. SINCLAIR, Sunderland; and G. E. PUNT, Bentley.

NOVEMBER COMPETITION.

Full particulars of the November Competition—subject, a plain dovetail joint—will be found on page 328.

For November Competition See Page 328.

HAND-MADE JEWELLERY.

THE SECRET OF SUCCESSFUL SOLDERING.

THE basis of all jewellery making is soldering, and if this is once mastered the principal difficulty may be held to have been surmounted. So many amateurs, however, fail to understand the *rationale* of the proceeding, that an account of how to carry it out successfully will probably be useful to many readers.

What Solder Is.

First of all let us consider what solder is. Every metal has a certain fixed temperature at which it becomes fluid and melts. Some kinds melt at a lower degree of heat than others. If a portion of a more easily melted metal is placed between two pieces of a more recalcitrant kind and subjected to heat, we should naturally suppose that it would act as a cement and stick the pieces together. To a certain extent this is what happens in soldering.* But it is found in practice that the most satisfactory thing to use is a mixture of the actual metal that is to be joined with a more fusible one. Thus we might solder gold with solder, but more usually an amalgam of gold with brass is used, while silver is soldered by a mixture of itself with brass.

combination of the metal with the oxygen of the atmosphere. It has been found that borax melts at a lower temperature than that at which the oxide begins to form, and covers the metal with an air-tight coating. Thus the solder finds no barrier to prevent it from attaching itself to the metal; it runs freely, and a good join results.

How to Solder.

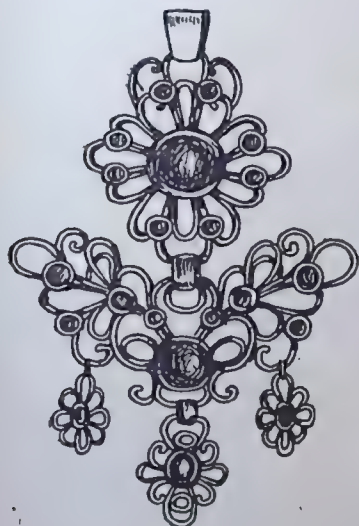
To make a start, cut two bits of wire, take the lump of borax and dip one end in clean water and rub it on the slate till a little pile of white paste is made. Make a row of cuts along one side of the piece of solder, then cut across the other way so that a lot of tiny squares fall off. These latter must be very small; the silver wire is thin, and if too large more heat would be required to melt them than the silver. This is a point where beginners often come to grief. Sprinkle the bits of solder into the borax paste and see that they are coated with it; then with the brush paint over the points at which the wires are to join. Pick up a bit of solder with the point of the brush and put it on the joint; light the lamp, and direct the flame on to the work by a current of air through the blow-pipe. A gentle amount of heat is required at first, just enough to make the borax boil up and then subside. See that the pieces of silver and the solder are in the right places, and blow a rather stronger flame till the metal is red hot and the solder flows along the joint.

A Soldered Ornament.

An attempt may then be made to carry out the smaller neck ornament shown in the illustration. It is a pear-shaped bead, either a Venetian one or amethyst mounted on a slide through which a velvet ribbon is passed. The slide is built up out of four lengths of wire, the centre one being sharply twisted on itself before being joined up. The two shorter pieces form carriers for the ribbon, and are bent up into C shapes. A tiny circle is made as a collar above the beads. Lay all the pieces in the exact positions in which they are wanted, and paint the points that touch with borax as before described; put a bit of solder at each place where they touch and apply the heat. When it is seen that the solder has run, drop the slide into the acid pickle while hot; this will clean it. Take a short length of the wire, double it, pass it through the rings which link it to the bottom member of the slide, then through the tiny collar-band and through the bead, and curl back the ends, using the round-nosed pliers. Give the whole a good rub up, and bend back the side wings of the slide to take the ribbon.

The larger illustration shows a more elaborate pendant made with the same simple tools. Such ornaments were worn by Italian peasants, and were made with the rudest appliances.

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PENDANTS :
ILLUSTRATING THE
ART OF
JEWELLERY
SOLDERING.

So far this seems simple enough, but, unfortunately, the matter is complicated by the fact that, on being heated, a coating of oxide forms on the outside of these metals and forms a barrier between the separate parts, preventing them from uniting. Now we can remove any dirt or oxide that is on the surface of the metal before it is heated by cleaning it thoroughly; but of course this plan is not available, for the film forms at once on heat being applied. The only thing to do is to prevent it forming. This is done by keeping the air away, for the oxide is just like rust: a

THE PICTORIAL IN FRETWORK.

A COMBINATION OF OVERLAYING AND INLAYING.

THE possibilities of the underlay in fretsaw work are nowhere more apparent than when pictorial designs are taken in hand. The success of a fret picture, cut in the ordinary way, is doubtful. As a rule it looks better on paper than when cut in wood. In the latter case its effectiveness depends chiefly on the background against which it stands. Inlaying, because of the colour combinations obtainable, is suitable for pictorial treatment, and even more striking is the overlay with a partly underlaid background.

The general background will of course be wood, the thickness being decided upon according to the purpose for which the panel is to be used. As the overlay is white a nice piece of dark walnut may be suggested for the ground. For the sea underlay, silverwood (of a delicate grey colour) is appropriate, while for the part of the sky indicated in tint a darker shade of walnut or a piece of rosewood may be chosen. These are only suggestions, and many other equally good suggestions are possible.

THE OVERLAY.—This is cut first, the xylonite



FIG. 1.—A PICTORIAL OVERLAY, WITH UNDERLAID BACKGROUND.

THE DESIGN.—The illustration shown here may be taken as a typical example. It is a sketch design only, and although readers who indulge in miniature cutting might use the illustration as it stands it is intended for a decorative panel from 12 ins. to 18 ins. in length. The part shown in black (the actual design) represents the thin overlay which will be mounted on a solid background, the white portion representing the only part of this ground which will be visible. The tinted portions are underlays—that is, woods of different colour inlaid into the background in order to emphasise the sea and the upper part of the sky.

MATERIALS.—The whole may be carried out in wood, but the overlay will look better if cut in unpolished white xylonite, which closely resembles ivory, a thickness of 1-25 inch being most suitable.

being sawn with a protecting board of wood behind. Of course it is not necessary to use white xylonite throughout. Variety could be introduced by adopting different colours for the clouds, boats, trees, &c. A colour scheme in the overlay is not recommended, however, as it is apt to make the pictorial fret look patchy. Nothing can have a finer appearance than the whole in white. Care should be taken to select xylonite of ivory-white grain, as the pure white variety has sometimes the appearance of cardboard. If polished xylonite is used it may be left with a glossy finish, in which case it is more easily kept clean; many workers, however, prefer to glasspaper the surface in order to get a matt white.

THE UNDERLAYS.—When the overlay is cut it is easy to mark the positions for the underlays on the background. In this case the underlaying is very

simple, each separate piece being inlaid entire, but in marking out care has to be taken to trace the line so that it will come behind a part of the overlay, and thus avoid any chance of the joint being visible.

The parts for the upper sky and sea are inlaid in the ordinary way, the surface afterwards being glasspapered smooth. In the case of the sea a little extra inlaying might, if desired, be done to indicate the boat shadows; this is not really necessary, but it will add to the generaleffect if carefully carried out. The finished background should be left unpolished.

FINISHING OFF.—When the overlay and background have both been thoroughly cleaned they are glued together. Liquid tube glue (of the best kind) is the usual adhesive, and the only word of warning in regard to this part of the work is to run no risk of the glue oozing out on to the background. If the panel is to be framed, as it probably will, the outer border may be left wider than shown, and the edges secured with fine brass pins. These will afterwards be hidden in the rebate.

It might be mentioned that in magazines there are often to be found decorative pictures which might be adopted for combined overlay and inlay work in this way.

If the design is to be used in its present size as a miniature overlay it will be necessary to slightly strengthen some of the finer lines.

Smaller Panel—Fig. 2.

Fig. 2 is another pictorial sketch which might be treated in a similar way. Here again the overlay, shown black in the illustration, will be 1-25 inch white xylonite. A suitable size for the panel would be about 12 in., and of course the floral ornament could be omitted if desired.

Assuming that the overlay were mounted on a wood panel which allowed a fair margin all round, the only part of this ground to show behind the overlay would be the three piercings in the framework. Obviously, the floral parts outside the frame would also stand against the general background. Otherwise the interior would be underlaid.

The work is the same as we have just described in the case of Fig. 1, and the only point to consider is the material used for the underlays. Three colours are required: one for the sky, one for the sea, and one for the foreground. If the main background is either oak or walnut, ebonia may be taken for the sky. The idea of a black sky may not appeal to all, but the panel is a decorative one, and it is the colour combination of woods that has to be considered. With a white border, the interior can afford to be dark, and nothing looks better than ebonia in conjunction with oak or walnut, especially with white xylonite for relief. Silverwood may again be taken for the sea, and perhaps rosewood for the part indicating the foreground. Or, if preferred, silverwood may be used throughout for the lower part. These three woods are inlaid into the background, the line of the saw coming behind the frame

border. The dividing lines inside the panel are easily hidden by the overlay.

These are comparatively simple examples of inlaid backgrounds, involving no difficulty in the cutting. It is in the sawing of the overlay,



FIG. 2.—ANOTHER PANEL IN WHICH OVERLAYING AND INLAYING ARE COMBINED.

indeed, that the skill of the worker will reveal itself, and as white overlays are always prominent, they merit the best work that the cutter can put into them.

III

All About Saws.

You would like to know all about setting and sharpening saws, the action, shape and bevel of saw teeth, how to choose a handsaw or a back saw, special nail-cutting teeth and all about all kinds of saws.

We have made arrangements with Messrs. Spear & Jackson, Ltd., the well-known saw makers of Sheffield, to send a copy of their most useful little book, "Concerning Hand-Saws," to every reader of THE WOODWORKER who will apply for it. The booklet is full of most handy information and is fully illustrated. Send a postcard for your copy to:—Messrs. Spear & Jackson, Ltd., Aetna Works, Sheffield. Mention THE WOODWORKER.

See December Issue for How to Make a Toboggan.

CABINET FOR EVERY HOME.

GRACE, SIMPLICITY AND USEFULNESS COMBINED.

THE SUPPLEMENT DESIGN.

ON the Design Supplement accompanying this issue will be found the full-sized details for making this cabinet—one of the neatest and most useful articles of furniture that the reader can construct.

The Design.

The cabinet, as will be seen, may be used in different ways. At Fig. 6 is shown an interior arrangement which will render it serviceable as a stationery cabinet, drawers, shelves and

Another consideration which adds to the usefulness of the design is that the upper and lower parts may, if desired, be utilised separately. Without the table, the cabinet may be provided with a $\frac{1}{2}$ in. or $\frac{3}{8}$ in. mitred plinth, and may stand on a mantelshelf or chest of drawers. Or, by adding two shaped brackets and a simple apron piece at the back, it may be constructed to hang on the wall. The table, again, may be finished without the cabinet part, and will be useful for occasional purposes.

WOOD.—Material will probably be selected to match existing furniture, oak, walnut and mahogany all being suitable. As the total cost of a hardwood is inconsiderable it is hardly worth while to make the article in whitewood and afterwards stain it. The Editor will at all times be willing to advise readers as to firms from whom suitable material may be purchased.

List of Parts.

	Long.	Wide.	Thick.
	ft. ins.	ft. ins.	in.
TABLE.			
(A) Legs (four)	2 7 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$
(B) Table top	1 8	1 4	$\frac{1}{2}$
(C) Front and back rails (two)	1 5	3 $\frac{1}{2}$	$\frac{3}{4}$
(D) Side rails (two)	1 1	3 $\frac{1}{2}$	$\frac{3}{4}$
(E) Shelf	1 6	1 2	$\frac{3}{4}$
(G) Front and back shelf rails (two)	1 5	1 $\frac{1}{2}$	$\frac{3}{4}$
(H) Side shelf rails	1 1	1 $\frac{1}{2}$	$\frac{3}{4}$
(I) Stretcher rail	5 $\frac{1}{2}$	4 $\frac{1}{2}$	$\frac{3}{4}$
(J) Cross rails (two)	1 1 $\frac{1}{2}$	4 $\frac{1}{2}$	$\frac{3}{4}$
(K) Slats (four)	11 $\frac{1}{2}$	$\frac{3}{4}$	$\frac{3}{4}$
CABINET.			
(L) Cabinet bottom	1 7	9 $\frac{1}{2}$	$\frac{1}{2}$
(M) Cabinet sides (two)	1 6 $\frac{1}{2}$	8 $\frac{1}{2}$ or 8 $\frac{1}{4}$	$\frac{1}{2}$
(N) Carcase top (whitewood)	1 6	8 $\frac{1}{4}$	$\frac{1}{2}$
(O) Back, in two pieces, each	1 7	9	$\frac{1}{2}$
(P) Shaped wings (two)	1 5 $\frac{1}{2}$	3	$\frac{1}{2}$
(Q) Mould around carcase top, allow	3 6	1 $\frac{1}{2}$	$\frac{1}{2}$
(R) Door stiles (four)	1 6	1 $\frac{1}{2}$ or 1 $\frac{1}{4}$	$\frac{1}{2}$
(Or the two meeting stiles, if rebated, may each be 1 $\frac{1}{2}$ in. wide).			
(S) Door rails (four)	9 $\frac{1}{2}$	1 $\frac{1}{2}$	$\frac{3}{4}$
Door panels, if required			
(two)	1 3 $\frac{1}{2}$	6 $\frac{1}{2}$	$\frac{1}{2}$
(T) Shaped top	2 0	11 $\frac{1}{2}$	$\frac{1}{2}$
(U) Pediment	1 11	5	$\frac{1}{2}$
(V) Top brackets (two)	9	3	$\frac{1}{2}$

These lengths and widths allow for joints, but are otherwise net. Thicknesses are net.

The Table.

The complete article may be considered in two parts, and the table may first be dealt with. The height is 2 ft. 8 ins., the top 20 ins. by 16 ins. and the widths over the legs 18 ins. and 14 ins. respectively.

THE LEGS (A) show 2 ft. 7 $\frac{1}{2}$ ins. in length, but



FIG. 1.—PERSPECTIVE SKETCH OF THE CABINET.

pigeon holes combining to make a most useful cupboard for the sitting room. Fitted more simply (with either one or two shelves) it will serve admirably as a bed-room medicine cupboard. Similarly, it could be fitted as a smoker's cabinet; or, with glazed doors, could be used as a china cupboard or a bookcase.

(Contd.).

SHELF (E).—The shelf edges may come flush with the outer faces of legs, in which case the size will be 18 ins. by 14 ins., or (better still) they may stand in about $\frac{1}{2}$ in., as indicated at Fig. 7. The corners are cut away to fit the legs. The shelf is not notched to the legs, but will be screwed to rails G and H from below.

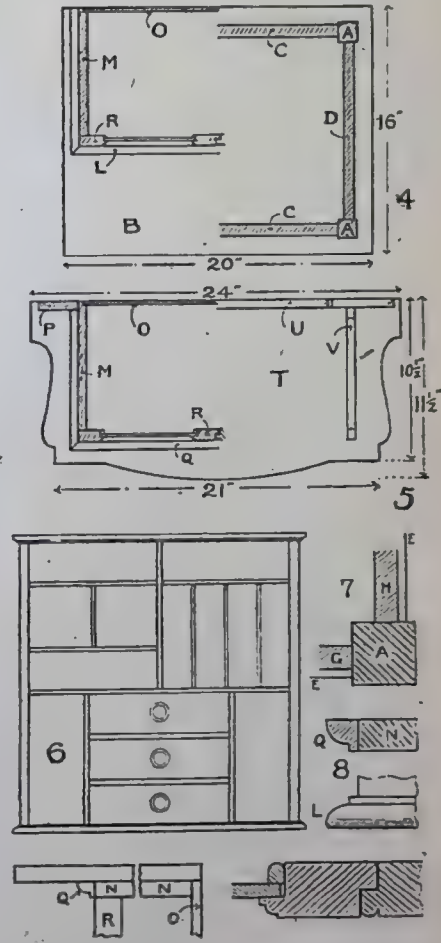


FIG. 10.—SECTION.

FIGS. 7 TO 10.—DETAILS.

2, 3, 4, 5 and 6.

SHELF RAILS (G and H).—Like the top rails, the shelf rails will be cut in length to an exact fit. They are tenoned to the legs, and thus form a strong bearing for the shelf. At their widest parts they are $1\frac{1}{2}$ in., narrowing to $\frac{3}{4}$ in. at the centre. The finished thickness may be $\frac{3}{4}$ in. As shown at Fig. 7, the rails stand back $\frac{1}{2}$ in. from edge of shelf—that is, about $\frac{1}{4}$ in. from face of legs.

CABINET FOR EVERY HOME (Contd.):

STRETCHER RAILS (I and J) may finish $\frac{3}{4}$ in. high by $\frac{1}{2}$ in. thick. The cross rails (J) are tenoned to the legs (set in $\frac{1}{4}$ in.), while the single stretcher rail (I) is tenoned to the two cross rails. The exact lengths must be carefully measured.

THE SLATS (K) show $10\frac{1}{2}$ ins. in length, but allowance will have to be made for tenons to enter the shelf and cross rails. If preferred, dowels may be used instead of tenons. The width between is 2 ins., and the slats should finish $\frac{5}{8}$ in. by $\frac{3}{4}$ in.

FITTING.—All general sizes will be found on the diagrams, and with regard to fitting there is little to be said. The top is glued on, and is held by the leg tenons and by glued blocks fitted in at the angles. By means of thumb slots it may be screwed to the rails (C and D) from below. The shelf (E) is screwed to its rails and all other fitting is by means of tenons and glue.

If the table is to be used without the cabinet it may be reduced in height—say to 2 ft. 5 ins. If this is done care should be taken to reduce each of the three divisions by 1 in.; that is, the height from floor to underside of stretcher rails will be 8 ins. instead of 9 ins., and the height to underside of shelf $18\frac{1}{2}$ ins. instead of $20\frac{1}{2}$ ins.

The Cabinet.

The carcass size of cabinet part is 18 ins. wide by 9 ins. deep, and $18\frac{1}{2}$ ins. high. The doors show 18 ins. A short description of the parts will make the construction clear.

CABINET BOTTOM (L).—This is 19 ins. long by $9\frac{1}{2}$ ins. wide, finishing $\frac{1}{2}$ in. thick. It may be of the hardwood used, with front and side edges moulded; or a whitewood carcass bottom (18 ins. by 9 ins. by $\frac{1}{2}$ in.) may be used and faced up with a $\frac{1}{2}$ in. by $\frac{1}{2}$ in. mould. The bottom will be grooved to take the sides, and rebated for the back.

SIDES (M).—As the doors open over the sides, the latter require to be only $8\frac{1}{2}$ ins. wide. They will show $18\frac{1}{2}$ ins. in length (the top $\frac{1}{2}$ in. being hidden by the planted-on mould Q), but $\frac{1}{4}$ in. extra must be allowed for housing to the bottom. They may be $\frac{5}{8}$ in. thick, but are better to finish $\frac{3}{4}$ in. The top edges will be dovetail-slotted to take the carcass top, and the back edges rebated for the $\frac{1}{2}$ in. back.

CARCASS TOP (N).—As this is hidden by the mould (Q) it is not shown in the diagrams, but is indicated in the little section at Fig. 9. It may be of whitewood, 18 ins. long and $\frac{1}{2}$ in. thick. As the $\frac{1}{2}$ in. back will overlap, the carcass top need only be $8\frac{1}{2}$ ins. wide. It is dovetailed to the sides (M). At the front it projects $\frac{7}{8}$ in. beyond the sides in order to let it cover the doors.

THE BACK (O) may be of $\frac{1}{2}$ in. whitewood (stained), made up of two pieces, about $18\frac{1}{2}$ ins. by $8\frac{3}{4}$ ins. The centre joint may be hidden by a narrow fillet.

WINGS (P). These nicely shaped parts are $17\frac{1}{2}$ ins. long by 3 ins. wide, finishing $\frac{1}{2}$ in. thick.

They are dowelled and glued in position, coming flush with the back.

MOULD (Q) may be as section, Fig. 8, $\frac{1}{2}$ in. by $\frac{1}{2}$ in. It is glued to front and side edges of carcass top and gives a neat finish. At the ends it butts against the wings (P).

DOORS. The two doors are framed up of stiles (R) and rails (S) in the usual way. The framing may be $1\frac{1}{2}$ in. by $\frac{3}{4}$ in. for outer stiles and for rails. The inner stiles are rebated to close as Fig. 10, with a parting bead, and on account of this an extra $\frac{1}{8}$ in. in width should be allowed. Thus, if these centre stiles are $1\frac{7}{8}$ in. wide, and rebated $\frac{1}{4}$ in., as Fig. 10, the total width over both will come out at $3\frac{1}{2}$ ins. The doors, which are 18 ins. high, open over the sides, to which they will be hinged with 2 ins. brass butts.

The doors may be fitted as desired in one or other of the following ways:—(a) with plain wood panels, $\frac{1}{2}$ in., or raised panels, with a $\frac{3}{4}$ in. field; (b) panels with simple inlay; (c) leaded lights of a neat pattern, which may cost from 4s. per pair, according to the design; (d) plain glass, if for a bookcase, or bevelled glass if for a china cabinet; (e) a companion pair of pictures of the autotype or carbon print kind. A flush cabinet bolt for left hand door and a bullet catch for right hand door should be provided; a lock and door stop may be added if required.

SHAPED TOP (T). The $\frac{1}{2}$ in. top, shown at Fig. 5, is of a pleasing shape, the sizes being as marked on the diagram. Its back edge is flush with the back, and it is screwed to the carcass top (N) from below. It will be holed for the dowels of pediment (U) and brackets (V). Note should be taken that the top is 2 ft. at the back and 21 ins. wide at front; the depth is $10\frac{1}{2}$ ins. at the ends and $11\frac{1}{2}$ ins. at the centre.

THE PEDIMENT (U) is 23 ins. by 5 ins., shaped as shown and with an oval fretcut centre. It finishes $\frac{1}{2}$ in. thick and is dowelled and glued at back of top.

THE TWO SHAPED BRACKETS (V) are 9 ins. by 3 ins., finishing $\frac{1}{2}$ in. thick. They also are dowelled in position.

Interior Fittings.

The interior arrangements depends on the use to which the cabinet is to be put. If required as a bookcase or a medicine cupboard, one shelf, fixed with two fillets, will be sufficient. If for a display cabinet, two lighter wood shelves or two plate glass shelves may be fitted. A smoker's cabinet may have either one or two shelves, with or without a central upright partition as required.

At Fig. 6 is given a suggested interior arrangement for a stationery cabinet. The stouter partitions may be 5-16 in. or $\frac{3}{4}$ in., the thinner ones $\frac{1}{2}$ in., all being grooved into position. The drawers may have $\frac{1}{2}$ in. fronts (fitted with flush pulls), $\frac{1}{2}$ in. sides and backs and $\frac{1}{2}$ in. bottoms. The arrangement is of course only a suggestion, and the spacing may be altered as desired. 110

THE SECRET OF FIGURED WOOD.

HOW TIMBER IS CUT.

TERMS such as "quarter," "rift," and "edge" grain are really interchangeable, although there are several different methods of cutting the log. When the timber is cut so as to show the figure it is termed "log bastard" sawed, but the common method of securing this class is not to quarter the log and saw from the centre outwards. To secure the minimum of shrinkage or warp, a board must be "quarter rift" sawed, which means cutting the medullary rays at right angles with the circles of growth.

Sawing of Quartered Oak.

Quartered oak is simply "rift" sawed, the term "quartered" arising from the method of first cutting the log into quarters and then cutting the quarters, as shown in Fig. 1 of the following diagram. The lines *a b c d* are those upon which the log is supposed to be quartered; the circles represent the concentric rings of the tree's growth. The straight lines across the upper half of the log show the ordinary method of slicing it up into boards with a circular saw.

Wherever the cut of the saw crosses the circles at right angles, or nearly so, that much of the board is quarter sawed; when it runs nearly parallel with them it exposes the grain, and is called plain or "bastard." The board nearest the middle will be almost a perfectly quarter-cut piece, while the fourth one from it toward the outside will be just about half quarter and half plain.

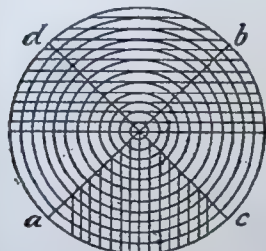


FIG. 1.



FIG. 2.



FIG. 3.

QUARTERED WOOD.



FIG. 4.

PLAIN-CUT WOOD

Supposing the lower quarter to be cut out from the log, the common and most simple method of quarter-sawing is to make the cuts as shown by the upright straight lines which cross the concentric rings at sufficiently near right angles for making good flooring. Each piece, however, will have a bevelled edge as shown, which must be squared.

Plain Sawing.

The common method of plain or "bastard"-sawing is illustrated in Fig. 2. It consists of turning the log to expose the grain as much as possible. The diagram only shows cuts that would make an ordinary cant of the piece, but the judgment of the sawyer must be exercised to so turn the log as to make its form

square, octagon or hexagon, as may be best to expose, and allow its curve to show in the centre of the board. Both of these methods of sawing are wasteful to the timber, but that cannot well be avoided.

Judicious plain-sawing in certain kinds of timber, such as oak or ash, develops some very beautiful grain effects, and for ornamental finishing purposes enhances the value of the wood.

Sections of Cut Timber.

The appearance of pieces of timber quarter and plain cut may be seen in Figs. 3 and 4. If laid in a floor Fig. 3 will wear rapidly and unevenly, and always have a tendency to sliver, while Fig. 4, having the ends of the grain exposed, will greatly outlast it, wear more evenly and present a much better appearance.

As the panel to a piece of furniture, Fig. 3 is considered handsomer than Fig. 4.

Cutting for Figure.

As pointed out recently in *Woodcraft*, with oak and similar woods, where it is desired to show as much as possible the typical figure produced by quarter-sawing, the line of sawing should be almost directly between the heart and the outside of the log. The same is necessary where the purpose is to avoid warping, as in materials for wide panels, table-tops, etc. The difficulty in this method of cutting is that almost every piece has a bevelled edge, and has to be run through an edger.

Furniture Hard Woods.

How much do readers know of the timber on which their tools are exercised? Experience may give you a superficial knowledge of the particular woods you are accustomed to use, but an understanding of the structure, growth, and qualities of woods would direct you into paths of progress which you had never dreamed were open to you before. It is for this reason that *THE WOODWORKER* handbook, "Hard Woods—English and Foreign," has been prepared. Of the better-known woods described are English, American, African, Baltic and other oaks, the various species of mahogany, walnut, beech, ash, plane, elm, birch, sycamore, maple, holly, rosewood, satinwood, teak, and padouk. Of varieties less used by the ordinary woodworker, pear, box, cherry, hazel, amboyna, tulip, ebony, lignum vitae, hickory, olive, greenheart, and sandal are dealt with; while rarer woods, such as kingwood, coromandel, snake, purple, partridge, lance, fustic, acacia, etc., are described. The details as to structure, seasoning, cutting grain, &c., are most valuable, and even to the home worker in a small way the handbook is one that will give a much clearer idea of the materials upon which he works. The price of the handbook is Sixpence, or it may be had post free for Sevenpence from EVANS BROS., LTD., Sardinia House, Kingsway, London, W.C.

Also, uniform with the above, "Soft Woods and Colonial Timbers," dealing with pines, American whitewood, larch, lime, willow, satin walnut, etc., 7d. post free.

ELEMENTARY WOODWORK.

USEFUL HOUSEHOLD ARTICLES—A PLATE RACK.

A VERY serviceable plate rack may be made from a few odd pieces of yellow deal at a nominal expense. Figs. 1 and 2 give the front and elevation of the rack, together with the main dimensions.

The first thing to do is to prepare some lengths of $\frac{3}{4}$ in. by $\frac{3}{4}$ in. wood, four about 13 ins. and three $13\frac{1}{2}$ ins. long, also one 16 in. and two 8 in. pieces of $1\frac{1}{4}$ in. by $\frac{1}{2}$ in. stuff. The two ends, as indicated at Fig. 2, should be made first, the base of the triangle being 8 ins. and one of the sloping sides sawn off at the top to fit against the other. Nail the top together and

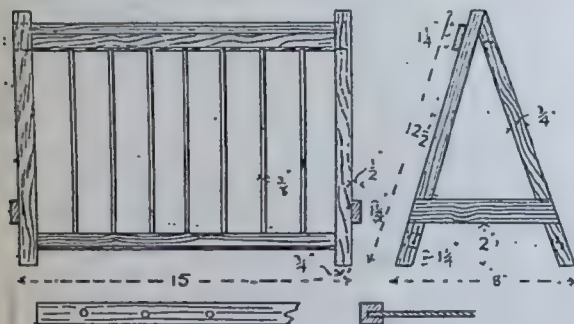


FIG. 1.—ELEVATION, ETC. FIG. 2.—END VIEW, ETC.

then the cross length at a height of 2 ins. from the bottom. Next procure seven 10 in. lengths of $\frac{3}{4}$ in. dowel rod; these are to be had in 30 in. lengths so that four rods will be ample.

Next find a centre bit to bore a hole just large enough to fit a rod in, and bore seven holes in two $13\frac{1}{2}$ in. lengths of $\frac{3}{4}$ in. by $\frac{3}{4}$ in. wood. These holes should be bored half-way or a trifle more through the wood, as indicated in plan and section at Figs. 1 and 2. When the holes have been bored, glue the ends of the round rods and drive them in. The two rails should now be nailed to the end pieces as shown. To strengthen the back, nail

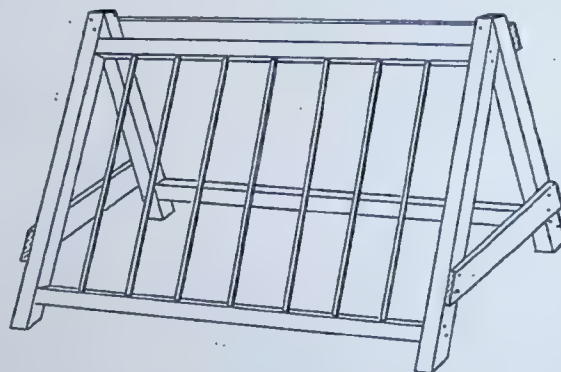


FIG. 3.—THE PLATE RACK COMPLETED.

on the remaining length of $1\frac{1}{4}$ in. by $\frac{1}{2}$ in. wood already prepared, together with the third length of $13\frac{1}{2}$ ins. the latter piece being on the same level as the bottom length in front. The completed rack is shown at

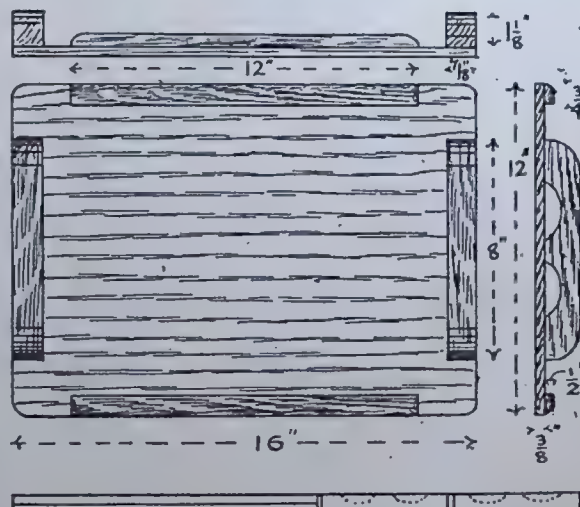
26

A TEA AND COFFEE TRAY.

THE tea tray shown here is a very suitable piece of work for a beginner, for the base may be made from a piece of fretwood and the remaining parts are not at all difficult.

It will be seen that a piece of $\frac{3}{4}$ in. fretwood 12 ins. wide and 16 ins. long will be needed for the bottom of the tray, while a 2 ft. 6 in. length of $1\frac{1}{4}$ in. by 1 in. stuff will provide enough material for the borders and handles.

The thin piece should be carefully smoothed with fine glasspaper, the ends squared, trued up and the corners rounded off to a radius of 1 inch or so. This is easily done by gradually working to the compass lines with a sharp chisel, but it will be necessary to keep the wood pressed tightly down on to a cutting board of some kind. A piece of whitewood, owing to the evenness of its grain, forms a good surface for paring on. If it is necessary to clean up the edges of the wood with glasspaper great care must be exercised that the appearance of the corners is not spoiled. The best thing is to place the wood on the table so that the edge which is to be cleaned up projects. The glasspaper should be folded over a wooden or cork faced block, rubbed along the edge and held at right angles to the top. Attention should be paid to this so that the corners are not rounded off; many



A

A SIMPLE TEA TRAY.

ELEMENTARY WOODWORK (Contd.).

amateurs are not careful enough, and often spoil their work by overdoing the glasspapering.

The piece of $1\frac{1}{4}$ in. by 1 in. wood, which should be the same as that used for the bottom, may now be planed to $1\frac{1}{4}$ in. by $\frac{3}{4}$ in., keeping it full rather than smaller. Set off a length of $12\frac{1}{2}$ ins. from one end and saw it down the centre to make two equal lengths as indicated at A. Plane both these pieces to $\frac{1}{4}$ in. wide by $\frac{1}{2}$ in. thick, saw to correct length, and then round off one edge and both ends, using the plane for the former and a sharp chisel for the latter portions. If a bench vice is available, the wood may be placed in it and easily planed down, otherwise it will be necessary to screw the strip to a board which may be cramped to the table; the screw holes being underneath will not matter. To make the strips quite smooth it will be as well to use glasspaper on the long edge with a block of wood, and then to pare the ends from the inside plain edge to the outside and rounded edge, glasspapering these last of all.

The handles are set out to a length of 8 ins., with the

hollowed out portions commencing $\frac{1}{4}$ in. each side of the centre and worked out to a length of $2\frac{1}{4}$ ins. and a depth of $\frac{5}{8}$ in. If a fretsaw is available, it will be a simple matter to saw out these curved portions, but it is possible to do it with a spokeshave only. The top corners are easily pared on a board with a sharp chisel.

To complete the tray, mark out the position of the handles and borders on the top with a sharp pencil, then bore holes, four for the borders and three for the handles, and enlarge them underneath. A countersunk bit will be most convenient, but the big blade of a pocket knife, held upright and turned round a few times inside the hole, will enlarge it sufficiently. For the border pieces $\frac{1}{4}$ in. screws should be used, but at the ends it will be necessary to drive in 1 in. screws.

If the tray is to be waxed or French polished, the screwed on portions should be removed and each part polished separately. Oak, walnut, or mahogany is most suitable, but whitewood carefully stained and polished will look very well.

25

A STORY ABOUT CHOOSING A PLANE.

IT is the dinner hour, and the new apprentice in the cabinet shop approaches the foreman.

Apprentice.—Please, sir, I have now been at work a month and father said I could keep my wage this week to buy a plane.

Foreman.—Right, Jack; a good idea to buy your tools week by week as you feel you can afford them.

App.—I thought of beginning with a smoothing plane, and perhaps you could give me a few tips on buying a good tool.

Foreman.—I'm not a tipster, but I certainly can give you a word of advice. In the first place do not buy a smoothing plane that is too wide to be comfortably grasped. See that it is fairly narrow at the back; otherwise you will find that it cramps your right hand and raises blisters.

App.—Yes, I noticed Higgins reducing the width of his new plane last week, so as to make it comfortable when working.

Foreman.—I have often had to do this for our lads, and it's all through bad choice.

App.—I heard Higgins falling out with his new plane, and he said what he wanted was to get the pitch right. What did he mean?

Foreman.—The angle of inclination at which the cutting blade is set to the sole of the plane is called the "pitch" of the plane; 45 degrees is called "common pitch," and this angle is generally used for soft wood like pine and American whitewood.

App.—Then Higgins said something about wishing he had bought a "yorker."

Foreman.—You mean "York pitch." That is the term used to describe planes that are used chiefly on hardwood, say on mahogany or teak, and the angle is at 50 degrees. Moulding planes, which are used without a back or cap iron, are set at from 55 to 60 degrees.

App.—What kind of wood should be chosen?

Foreman.—English beech, straight grained and well

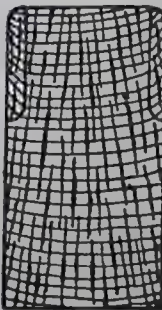
seasoned is the best. First class makers season their timber for about three years.

App.—Higgins said he always looked at the rays.

Foreman.—Medullary rays, you mean. These rays, like silver streaks, radiate from the pith or centre of the tree to the outside. They prevent the annual rings from sliding one on top of the other and carrying the sap to the heartwood. When selecting your plane examine the end of the body and see that the sole of the plane is as near as possible at right angles to those medullary rays. The stock should be cut from the outside portion of the tree and not from the heartwood. The sole of the plane should not be the portion nearest to the heart; see, here is a rough sketch.

App.—What about oiling the plane?

Foreman.—Twenty years ago it was a common practice to fill up the mouth of the plane with putty, and then pour linseed oil into the recess; but this is apt to swell and distort the wood, and also make the plane too heavy. The makers of to-day will not guarantee a plane



END VIEW OF
SMOOTHING PLANE.

treated in this manner. What you should do is, first remove all metal work, then take a piece of old flannel, dip it into raw linseed oil and rub it all over the plane. Repeat this twice a day for a fortnight; then carefully wipe away any trace of oil and rub in a little French polish. [This will keep the plane clean and make it pleasing to the touch.]

App.—Where would you advise me to purchase my plane?

Foreman.—Oh! at any first class tool shop look for addresses in THE WOODWORKER, or drop a line to the Editor.

52

ELEMENTARY WOODWORK (Contd.).

WHAT MAY BE DONE WITH THE SMALL LATHE.

NO doubt many of our readers have made the pole lathe illustrated and described in August and September, and probably have made the simple round ruler which was given as a suitable object to commence with. Another article, not more difficult than



FIG. 1.—HANDLE FOR A TURNING TOOL.

the ruler, is the turning tool handle shown at Fig. 1. The ordinary chisel handle is too short for use with a lathe; a more suitable size would be half as long again at

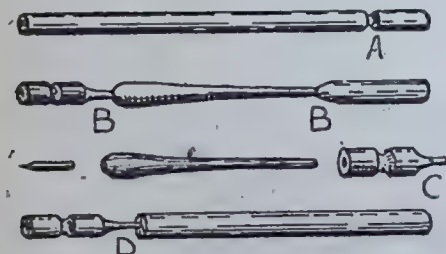


FIG. 2.—A PENCIL HOLDER.

least. A brass ferrule should be fitted on the end to prevent splitting; ordinary tubing cut to a suitable length will be quite satisfactory for this purpose.

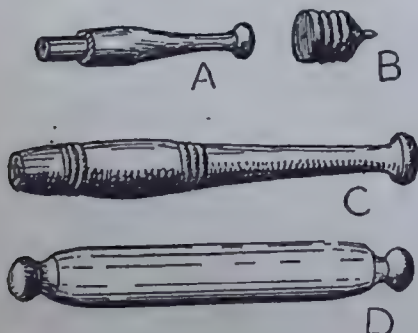


FIG. 3.—FOUR USEFUL SUGGESTIONS.

To commence with, take a length of ash or beech about 1½ in. square and bore holes in the end so that the lathe centres can fit in them. Next round roughly with a plane and groove the end as shown at A. When

the work has been placed in the correct position for turning, the shape should be roughed out with the gouge and then trued up as far as possible with a chisel, leaving the inner portions of the curve to be finished with the sharpened gouge. The small ridges shown at B are easily worked with the end of the chisel, and the finished shape may then be smoothed with glasspaper. To get the exact diameter of the ferrule end the easiest way is to use a pair of callipers, but a template may be made to the inside diameter as indicated at C.

Another useful little article is the pencil holder shown at Fig. 2. The length of wood should be prepared as before, and indicated at A; the shape should be cut out with the gouge and carefully finished, but care must be taken not to put too much pressure on the wood, or it will most likely crack at the thin ends as shown at B. The hole to take the pencil should be bored after the wood has been cut apart. Short lengths of wood may be used up by utilising one of the ends as indicated at C, boring a hole in the new piece and pushing in the end as at D; it will be found that if the fit is fairly true the two pieces will hold together as one.

Other objects quite simple to turn are shown at Fig. 3. A is a suggestion for the shape of a hat peg, B an ordinary top, C a leg for a small stool, and D a rolling pin.

23

The Use and Mis-use of Glasspaper.

THE beginner in woodworking of any kind often spoils the effect of his work by overdoing the glasspapering. This material is a valuable help, but like most things it has its limitations.

In the first place, glasspaper should not be used instead of a plane. The writer has seen work sent to Arts and Crafts Exhibitions made from unplanned wood smoothed over with glasspaper and varnished—the completed article the pride of the maker who most probably knew no better. This is not to be wondered at when one reads in the pages of the magazines devoted to the "Home" that useful things may be made by "*procuring a packing case, sandpapering the wood and using it for a bookshelf.*"

Glasspaper is sold in various degrees of roughness, the most useful numbers for the amateur being 2, 1, and 0; number 1 is the best for all-round work. Only in rare cases should glasspaper be used without a block or holder. It is better to cover a block with cork rather than use the hard surface of the wood, a convenient size being about 4½ ins. by 2½ ins. by 1 in.

In order to get the best finish, it is advisable to rub the paper with the grain and not with a circular motion.

The square edges of thin wood should be retained after the use of glasspaper, and this can only be effected by the use of a block, and with care that the surfaces of the paper and the wood are parallel.

When cleaning beads, etc., small pieces of paper should be folded in order to make the glasspaper as stiff as possible.

24

For Special Offer of Free Designs See Page 328.

THE QUESTION BOX.

ILLUSTRATED REPLIES TO READERS' QUERIES.

QUESTIONS of general interest dealing with any branch of woodwork or other handicraft will be answered here. Readers, however, will kindly note:—(1) As the Editor may desire to reply by post a stamped addressed envelope must be enclosed. (2) Questions will be answered as early as possible after receipt, but when sketches have to be prepared, or when research has to be made, a short interval must elapse.

NOTE.—With each query must be sent a "Question Box" Coupon. (See page 3 of Cover). All queries to be addressed: Editor, WOODWORKER AND ART CRAFTSMAN, Sardinia House, Kingsway, London, W.C.

Large Cabinet for China and Glassware.

A LARGE cabinet of the sideboard type is often wanted for the miscellaneous china and glassware in daily use. A reader (A. J., Perth), who is making such a cupboard, asks us to give him some particulars in regard to the construction, and as the matter is one that should interest all home cabinet makers, we give a rough sketch of the design, and

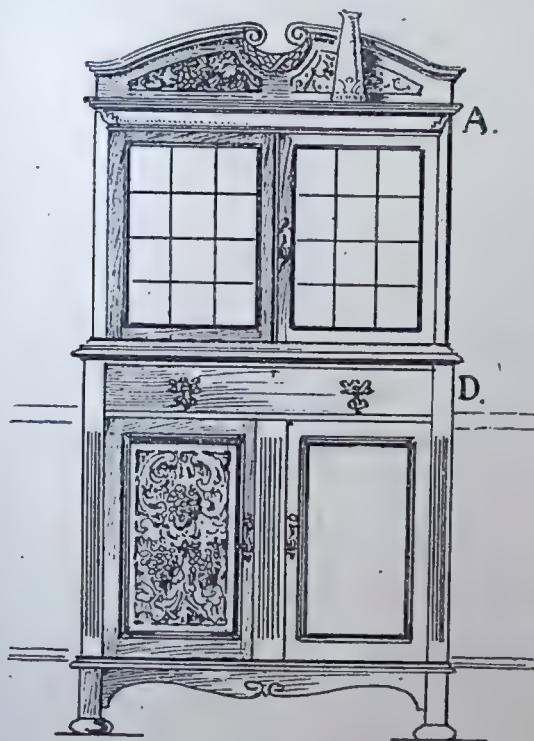


FIG. 1.—CHINA CABINET.

Size, 5ft. 9ins. high by 3ft. over carcass.

offer a few suggestions on the details and fitting. From these any reader will be able to construct a useful cabinet on similar lines.

REPLY.—We have prepared you a suggestion on the lines of your pencil sketch of the china cabinet you propose to make. The result when made up would be a somewhat heavy-looking piece of furniture, but if carefully treated the finished article should be effective. The dimensions, as sketched, are 3 ft. wide on carcass below. The depth should not exceed 18 ins. unless a back-to-front measurement of 21 ins. is required for special reasons. The height to cornice shows 5 ft. 2 ins., and an improvement upon the plain top would be to

fit a back, 6 ins. to 7 ins. high, to be moulded as shown. You suggest carving the lower side panels of carcass but this is not usually done, and we think it would be much more satisfactory if these panels were moulded and left plain. The upper back might then be made the subject of your best in the way of carving, as its position at eye level will give it full prominence. You could finish with plain tapered feet, but the effect would be better if the finish was in the style of that shown. The upper part of cabinet has leaded glass in doors, which will suit the whole thing very well, and the same can be introduced into the sides here. A projecting mould is also suggested above these doors with the ends carved up as a further relief. The handles had best be of blacked iron of the drop pattern on a 4-inch drawer front. A few rough notes are added at Fig. 2 for putting together. The sides if

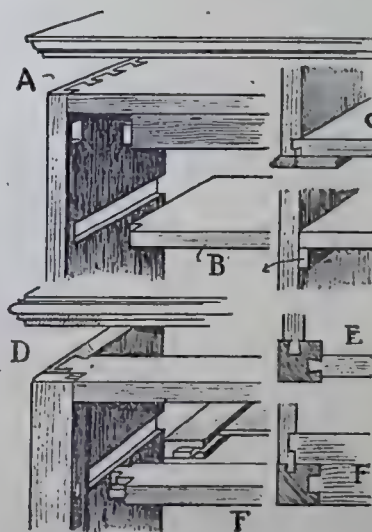


FIG. 2.—DETAILS OF CHINA CABINET.

framed up can be dowelled or mortised together with dovetailed rails connecting them; or if the ends are made about 12 ins. deep only, without glass panels, they can be put together as at A, Fig. 2. The shelves (B) can be grooved into solid sides, or may rest on fillets. The bottom can be dovetailed in as top, or dovetail-grooved in as at C, cut back $\frac{1}{2}$ in. from front so that the joint does not show. If pilasters are preferred, as your pencil sketch shows, you can use these, glued in position to mask the joint. Or a $\frac{1}{2}$ in. bottom could be screwed on, rebated to fit up behind the doors and act as a stop for them. Doors would be mortised and tenoned together, preferably right through, and a panel back will look best. The leaded glass can be obtained through the local glazier. The lower carcass, with solid sides, can be put together with dovetailed top rails front and back as indicated at D, Fig. 2, and screwed, the top also being screwed from underside through thumb slots. If framed up

THE QUESTION BOX (Contd.).

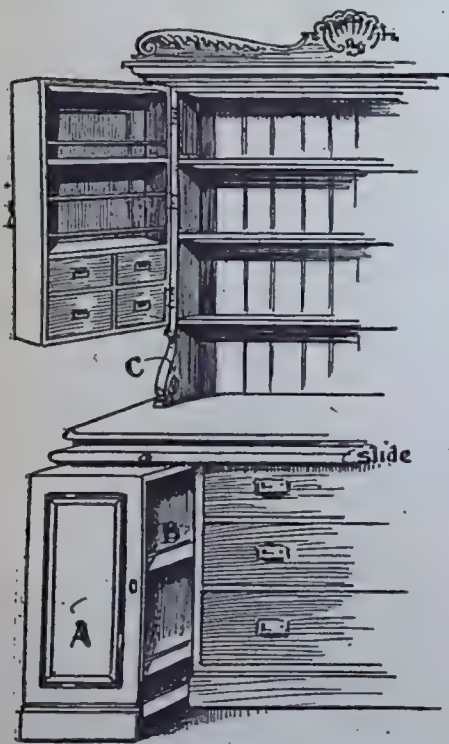
for panels, the top rail had best be about 6 ins. wide, to finish in line with drawer bearer, so that the line of panels is carried level round front and sides. If square 2 in. legs are fitted instead of pilasters, these can be framed up as at F, below drawer. The runners should have dust boards grooved into them as indi-

cated. The centre pilaster can be about 1 in. wider than the side ones, all being shown with stopped flutes. The ball feet can be separately turned and dowelled into legs, or can be separately fitted to a lower framed stand, dovetailed together as E, to be screwed and blocked to the under part of lower carcass. 38

A Kitchen Cabinet-Dresser.

The cabinet dresser, as illustrated below, is an article of kitchen furniture more frequently seen in America than in this country. In response to a request from T. L. (Doncaster) we give brief particulars which should enable readers to make one of these useful and handsome dressers.

REPLY.—We have examined the illustration en-



KITCHEN CABINET-DRESSER.

closed with your letter, and give a sketch of the kind of cabinet you wish to make. Height of lower part may be 2 ft. 9 ins., width over table-top 5 ft. by 20 ins. or 24 ins. deep back to front over all. The top has rounded corners and is moulded thumb. The carcass sides can be plain or panelled. They can be held by three rails, 3 ins. by 1 in., dovetailed in and screwed. The bottom, of 1 in. thickness, had better be dovetailed in, the intermediate partitions being tenoned and wedged right through. The centre portion, showing three drawers, can be made in the usual way: partitions, drawer bearers and fronts of 1 inch thickness, sides and backs $\frac{1}{2}$ inch thick, bottoms (muntied) $\frac{1}{2}$ inch thick, plinth 4 ins. high by $\frac{1}{2}$ in. with moulded top. The end

casings (A) are made to pull forward on rollers, and may be about 12 ins. wide. The fronts can be panelled up and finished to slide backwards and forwards flush against the drawer casing. The top can be dovetailed into front and back, and the rails (B) about 2 in. by $\frac{1}{2}$ in., had best be dovetailed and screwed. These rails can be fitted in the same way to each side of front and back, with bottoms of $\frac{1}{2}$ in. thickness, screwed up to them to form shelves. Fillets $1\frac{1}{4}$ in. by 1 in. can be screwed to the inside ends and partitions for the rails to travel upon, and a rub of hard soap along the edges in contact will prevent the parts binding. Immediately above these pull-outs (A) an extension of the table top is fitted as a slide to pull out and rest upon the pedestals. This slide should fit loosely, and the front can be faced with a fillet rounded off neatly and fitted with brass knob handles. The upper part can be of 1 in. thickness, and is made after the manner of the ordinary kitchen dresser, with three shelves suitably spaced. The top should be dovetailed to sides, and the lower shelf dovetail-grooved in. The intermediate shelves may be housed in. The cornice, however, in this instance is made to project about 8 ins. extended to cap the two hinged cases which fold and meet in the centre. As the width over the sides at C will be about 4 ft. 9 ins. the cases will each be fitted with three stout brass hinges. The partitions between and above the drawers here can be $\frac{3}{4}$ in. thick; also the drawer fronts and upper shelf. The rods can be of $\frac{1}{2}$ in. beech dowel. The back forming the front of case when closed can be panelled up of $2\frac{1}{4}$ in. by 1 in. framing, and $\frac{3}{4}$ in. panelling, which, on account of the width, had better be split up into two or four panels for each case. In putting the cases together they had best be dovetailed like the drawers, and may be fitted with a brass bolt or slip catch top and bottom to hold when closed. The pediment may be 6 ins. high, with applied carving as relief. For back use $\frac{3}{4}$ in. matching, 4 ins. wide. 36

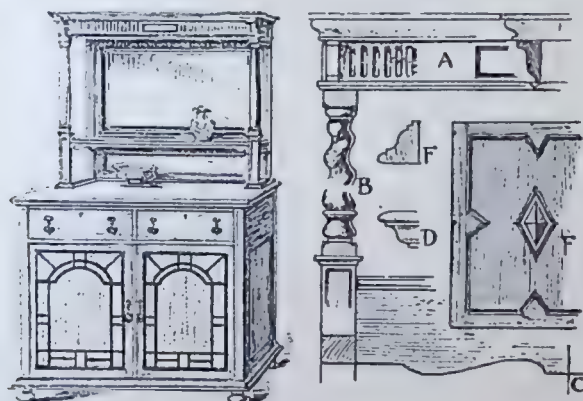
Sideboard.

R. H. B. (Ipswich) writes:—"I wish to make a sitting room sideboard in yellow deal (to be stained walnut) on lines similar to the one illustrated on page 276 of Volume XV. (October, 1911). The width, however, must be only 3 ft. 6 ins. I wish also to have the doors of a simple fretted design. I enclose a rough sketch with particulars."

REPLY.—You might work out your sideboard on the lines indicated here. The lower doors could have a backing behind glass of pleated silk stretched upon brass rods, with a fret-cut panel of 3-ply as shown dropped into the rebate before the glass is set in. Care should be taken to cut the outline true and clean, and to let outer border (about $\frac{1}{2}$ in. wide) fit neatly into the rebate so that it shows about $\frac{1}{2}$ inch beyond the mould of the door frame. The ends can be panelled either as the sideboard referred to or in the manner

THE QUESTION BOX (Contd.).

shown here. The upper part may be about 2 ft. 9 ins. high, with the cornice and frieze $4\frac{1}{2}$ ins. The cornice is supported under the front projection beyond frieze by two small brackets, and the suggested row of flutes might be broken in the centre with a panel. The columns can be made shapely by giving them a swell in the centre, and can be of 2 inch stuff. The mirror frame is kept square, but might have the upper corners canted 3 ins. with a small panel in the angle. The shelf is shown as straight, moulded, with a shaped apron piece under, and the lower portion of column (kept square) has the space between it in the back open. As you appear anxious to introduce some little character into the sideboard, we offer a few details in Fig. 2 which should help you. The cornice (A) may be as shown, but the columns could be turned with a twist as at B, and the shelf under glass shaped and



SIDEBOARD, WITH DETAILS.

moulded to the half outline indicated at C. The top can be made up as D, and the base mould to the section F. The lower doors also might have a different treatment, the fret being taken away and the stiles and rails cut and moulded with a V, with panel of $\frac{1}{2}$ in. or $\frac{3}{4}$ in. thickness screwed on or rebated in from behind. The centre of panel will then be improved by mounting a bevelled boss on a panel of thin stuff, with the edges moulded as shown. These are details simple to carry out and will be found very effective when finished. 61

Manual Training. J. J.—To become an instructor in woodwork it will be necessary for you to have certificates in geometry, freehand and model drawing, as well as one for manual training. The latter certificates are issued by the City and Guilds of London Institute and the Board of Examinations for Educational Handwork. It will be necessary to attend classes in preparation for the above examinations. Write to the local Secretary of the Educational Handwork Association for particulars of classes: Mr. R. Trainor, 31, Elms Road, Heaton Moor. Particulars of any classes for the City and Guilds examinations may be obtained from the Secretary, Exhibition Road, South Kensington, S.W. 95

Sharpening Carving Tools (T. W. R., Leeds.)—All the carving tools should be sharpened on the same edge or edges on which they are ground. If this rule is followed no mistake can be made. 63

Polishing. G. G.—If you wish an easily worked polish certainly try "Polvar." With this you can get admirable results. All general instructions for polishing, &c., you will find in either of our handbooks: "Practical Polishing," 7d. post free; or (a more comprehensive book) "Staining and Polishing," 1/2 post free: (EVANS BROS., LTD., Sardinia House, Kingsway, London, W.C.)

Illumination.—In the "Artistic Crafts" series of technical handbooks, there is an excellent volume on "Writing, Illuminating and Lettering," by Ed. Johnston (new edition, 1913). This is a book of 500 pages, dealing exhaustively with the whole subject. There are 24 colotype plates and over 200 text illustrations. The price is 5s. net, and the publisher is Mr. John Hogg, 13, Paternoster Row, London, E.C.

Carpentry Joints.—T. C. M.—We know of no cheap handbook that will be of more help to you than our sixpenny "Woodwork Joints: How to Make and Where to Use Them." It gives you all the information you seek. Our publishers (EVANS BROS., LTD., Sardinia House, Kingsway, London, W.C.), will send it post free for 7d.

Oak Bedroom Piece [420]. S. S.—In the issue for May, 1912, you will find an excellent article, fully illustrated, on a useful piece of oak bedroom furniture, including washstand, chest of drawers, dressing glass, cupboard and towel rail.

Evolution of Tools. G. W. N.—A good account of the evolution of tools is to be found in "Harmsworth's History of the World." There is some mention of it in Binns' and Marsden's "Principles of Educational Woodwork" (Dent), and in Milton's "Principles of Educational Woodwork" (Blackie). 94

Coloured Prints. For the light frames you have made why not try the dainty Japanese coloured prints? Write for price list (mentioning THE WOODWORKER) to Messrs. Ken Hoshino and Co., 57-58, Chancery Lane, London, E.C. You will find that prices range from 1s. and 1s. 6d. upwards.

Planes. J. McA. D.—Write to Messrs. J. Buck, 56, Holborn Viaduct, London, E.C., who can supply you. As we mentioned last month, Messrs. Buck will send their 325 page catalogue free to any reader of THE WOODWORKER who encloses 4d to cover cost of postage.

Cabinet Bench.—In issue for April, 1912, there is a fully illustrated article on a cabinet work bench. The top is 3 ft. 6 ins., but an extension arrangement increases the length to 5 feet. Possibly you have this number; if not we can post a copy for 4d.

Removing Wax Polish from Carving (F. S., Westbury).—To remove the wax polish, wash it thoroughly with turpentine, using a stiff brush. It will be difficult to get all the wax out of the wood, but it will be softened enough to work in a dark stain. 63

Upholstering Materials [429]. L. T. M.—These you can get from Messrs. S. W. Hickman and Co., 35, Grafton Street, London, W. Our handbook, "Practical Upholstery" (6d., or 7d. post free) will help you in repairing and re-stuffing your easy chair.

Stencilling. T. M. B.—For the stencils, colours and other material you require write Messrs. Tillyer and Sons, Woodstock Street, New Bond Street, London, W. Messrs. Tillyer will send their price list to any reader of THE WOODWORKER.

See Page 328 for Offer of Free Designs to Readers.

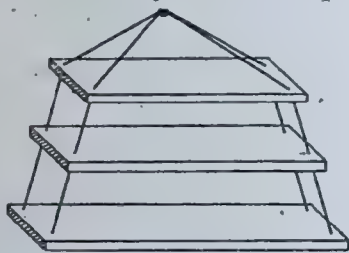
HOW TO DO IT.

PRACTICAL PARAGRAPHS ON EVERYDAY PROBLEMS.

UNDER the title of "How To Do It," we are always pleased to receive from readers short original suggestions (preferably illustrated) dealing with woodwork, metalwork, or any other handicraft. Interesting paragraphs dealing with every-day problems or difficulties in practical work will have preference. A postal order for each contribution used will be sent on October 10th. Contributions, *which must be original*, should be marked "How to do it," and addressed:—EDITOR, WOODWORKER AND ART CRAFTSMAN, Sardinia House, Kingsway, London, W.C.

Simple Bookshelves.

Three pieces of board and two pieces of string will form the bookshelves shown. They may be of any length or width; more shelves may be added if preferred, and they may be suspended anywhere. The holes for the string should be only just the right size to take it, and the string must be good so that it will not stretch. Apart from these conditions the drawing will give sufficient explanation.—13.

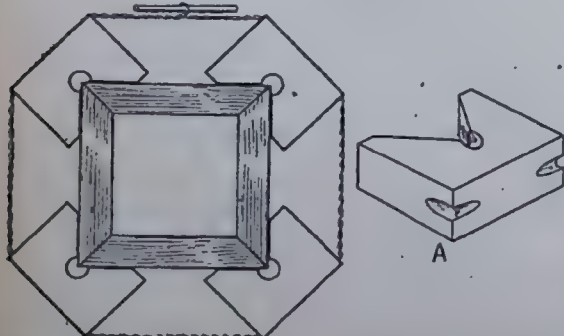


How to Know Good Glue:

Good glue should be very hard and elastic. When struck on an even hard surface it should give a clear, clicking noise. It should be very transparent and in a pure state have therefore only a light shade of colour. If the surface is free of bubbles and spots, and if the cakes of glue break evenly, the glue is satisfactory. The thinner the cakes are, the better is the glue.

Cramping a Mitred Frame.

The diagram shows a good method of cramping a mitred frame for glueing purposes. Cut four pieces of wood, 4 ins. by 3 ins. and from 1 in. to 2 ins. thick.

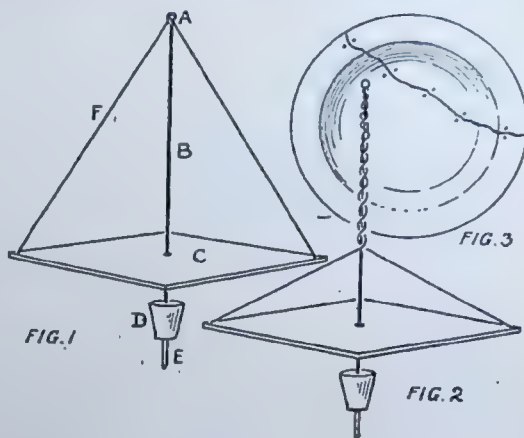


Mark a V right angle on each, drill a $\frac{1}{2}$ in. diameter hole at the vertex of each angle, and then saw out the V piece. Cut a little groove at each corner, as A, to take the cord which is tightened round the four cramps as indicated.

74

Drilling Glass and China.

Fig. 1 shows a drill about 11 ins. high and 9 ins. wide, worked by hand. The vertical line, B, is a piece of wire (No. 4 wire gauge) with an eye at the top, A, for a piece of catgut or string, F. The horizontal piece, C, is made of mahogany, 1 in. thick, with a hole in the centre for the wire to pass through. D is a piece of lead, or other metal, to give the drill weight. E is a piece of tin tube, which can be made by rolling a piece of tin round a needle and binding. The tube should be about No. 14 of 15 gauge. In the lower end of the tube fix a spark (or what is called a "diamond"), and the drill is complete.



To work the drill twist the wire round several times as shown at Fig. 2, moving the mahogany piece lightly up and down. Take a china plate, or what may be required to be mended, and mark with ink where the holes are required for the rivets as shown at Fig. 3. Take an old saw file and with the end of this lightly mark holes for the diamond to enter. Dip the point of the drill in sweet oil, and set it in motion. With a little practice holes in glass and china may be easily bored for riveting.

43

Using the Centre Bit.

When boring holes with the centre bit, and following the custom of reversing and boring from the back as soon as the point shows through, one often finds that the bit bursts through with a rush just at the last, leaving a jagged place just inside the hole. This can easily be prevented by first boring from the face side until the point shows through; turn the wood over, then place the point of the bit in the hole and cut a circle in the wood, but do not take anything out from this side. Finish boring through from the face, when a perfectly clean hole will be the result.

81

Wheel Repairing.

Every woodworker should know how faulty wheels are repaired. Full directions are given in an interesting article to be found on page 304.

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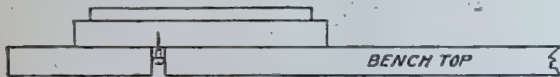
W. A. C. L. 1913.

Always mention "The Woodworker" when writing to Advertisers.

HOW TO DO IT (Contd.).

A Steady Oil Stone.

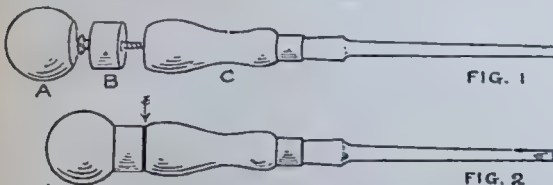
To prevent an oil stone from rocking on a bench while in use, insert a round-headed screw in the bottom of the box, about 3 ins. from one end, leaving the head to project about $\frac{1}{2}$ in. Bore a hole for the



screw head in the bench at some convenient point. No trouble from slipping will be found by adopting this method. 75

An Improved Screw-driver Handle.

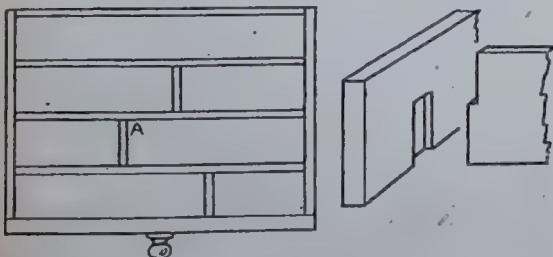
To the amateur who has many screws to drive in a screwdriver with a loose revolving end will be found easier to use and less apt to blister the palm of the hand. The handle is turned in the lathe and divided into three pieces, as A, B, C, Fig. 1. In the centre of B a screw hole is drilled, the hole being easy, and



well countersunk. B is then screwed to C in such a way that B revolves freely on its screw. (The screw head must be well below the surface.) A is then glued to B, and the finished handle is as Fig. 2, the ball end revolving at the line indicated by the arrow. 76

A Useful Knife Drawer.

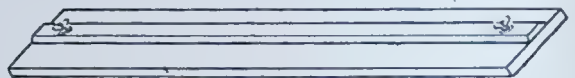
The following method of converting a drawer into a tidy knife drawer will appeal to those who do not like the old-fashioned knife basket. Obtain a supply of deal, say, 4 or 5 ins. wide and $\frac{1}{2}$ in. thick. Cut off three pieces to fix across the drawer, at equal distances apart, making four divisions. More may be used if desired. The drawer may then be divided according



to the lengths of knives, forks, spoons, etc., by means of pieces of wood jointed in as shown in sketch (A). The pieces may be covered with green baize or felt. The whole frame is easily detachable at any time, but will be a great advantage where a large number of knives are in use. 77

How to Cut Bevelled Mounts.

Amateurs often experience some difficulty in cutting card picture mounts with bevelled edges. The following simple method will enable many to get over this trouble. Take a piece of well-seasoned hardwood for the base, 2 ft. by 6 ins. and from $\frac{1}{4}$ in. to $\frac{1}{2}$ in. thick. Then prepare another piece (the guide) 2 ft. by 2 ins. and about $\frac{3}{4}$ in. thick. Plane the latter with edges bevelled accurately to 45 degrees, and bolt to base with two screw bolts and wing nuts. The space at one side of the guide should be $2\frac{1}{2}$ ins., and



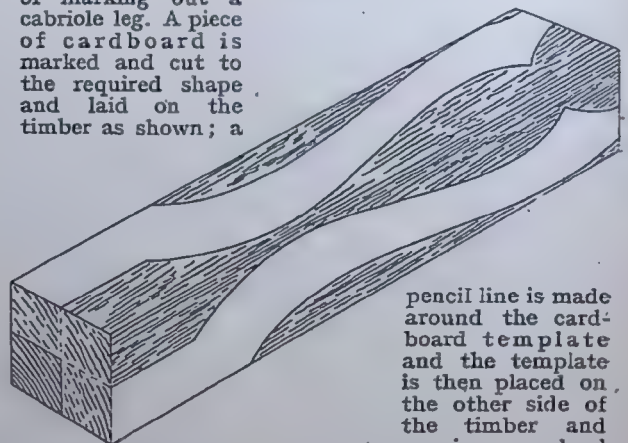
at the other $1\frac{1}{2}$ in. The mount to be cut may be adjusted between guide and base and held tightly by means of the screws. As both hands are left free it is easy to cut a satisfactory bevel. (Will correspondent kindly send his name and address?). 79

Driving Nails in Hardwood.

Difficulty is often experienced in the nailing on of hardwood mouldings, and a correspondent sends a simple remedy. In the shaft of his hammer he has bored (with a $\frac{1}{4}$ in. centre bit) a hole about 2 ins. long. This he fills with beeswax, or, as an alternative, with hard tallow. The hammer handle provides an excellent receptacle for such a lubricant. When a nail is to be used the point is simply pressed into the beeswax (or tallow). With the aid of the lubricant it is easily driven in. 80

Marking Out a Cabriole Leg.

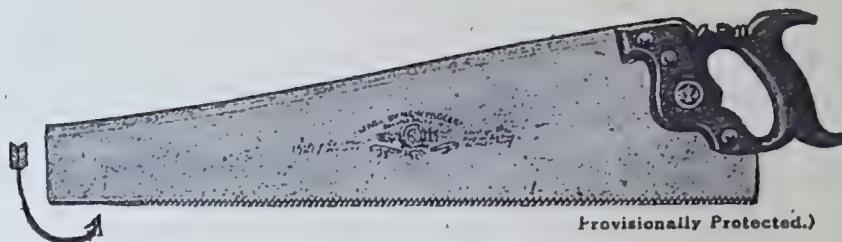
The accompanying illustration shows the method of marking out a cabriole leg. A piece of cardboard is marked and cut to the required shape and laid on the timber as shown; a



pencil line is made around the cardboard template and the template is then placed on the other side of the timber and again marked

around. The illustration shows the portion which is marked by the template white, and the waste portion which will be cut away is shown shaded. A bow saw is the tool used to cut out the leg; it is then carefully worked up with a spokeshave and glasspapered. 82

New Hand Saw



EASY STARTING - NAIL CUTTING

This new saw has about 4in. from the toe toothed with special small teeth so that there is no jar or tendency to jump when starting the cut. These teeth are also filed like a hacksaw, straight across, and can be used to cut through a nail or other piece of metal embedded in the wood.

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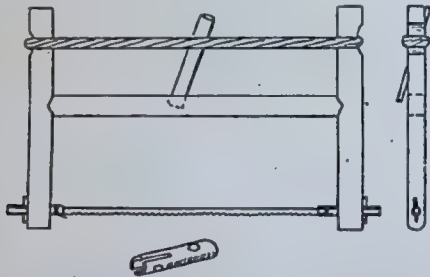
HOW TO DO IT (Contd.).

To Sharpen Tools Without an Oilstone.

Any flat piece of ordinary stone, or even a piece of zinc or hard wood, can be made to do duty for an oilstone by mixing the oil used with fine emery powder. The finer the powder used, the keener will be the cutting edge obtained, and of course *vice versa*. This is a handy wrinkle to know when away from home, as it is usually easy to find the required flat wood, and the necessary emery can be had by commandeering someone's knife-cleaning powder. The finest grains of the latter only should be used. 99

A Rough-and-Ready Bowsaw.

A few pieces of hardwood, preferably beech, may be quickly made into a serviceable bow-saw as shown below. Some 3-16th or $\frac{1}{4}$ in. brass tubing should be procured, and one end of two short lengths slotted.



Holes should be drilled as shown, one through the slotted portion and the other further along. Next bore holes in the end of two uprights to take the tubing; fit a cross bar equal to the space inside the bottom of the frame plus the amount of the angular projection, and then place the string in a hollowed recess at the top and tighten with the stick. Nails in the outside holes of the tubing will hold the frame together. 91

How to Tighten Loose Saw Handles.

When the handles of hand or similar saws become loose, it is usually caused through the wood shrinking and the holes thus getting too large for the screws. If this is not attended to the screw will quickly be cut in two by the saw-blade. If taken in time, the tightening up of the screws will be sufficient. But if the trouble has been going on for some time this will not do, the better remedy being to remove the screws, fill up the holes, and when the glue is set bore others, taking care not to make them too large. If, on removing the screws, they are found to be weakened, it will be best to insert new ones; the cost is only a few pence, and they can be obtained at any tool dealers. When a tenon saw handle becomes loose it may be tightened by inserting a small wedge at the end of the iron (or brass) back, where it fits into the handle. 100

The Art of Using Varnish.

Varnish in the hands of a novice is apt to prove treacherous, especially in the case of spirit varnish, which is most commonly met with in the form of varnish stains "which anyone can use." To make a successful job with these put on plenty of varnish, and do not go over any part twice. 107

How to Make a Blackboard.

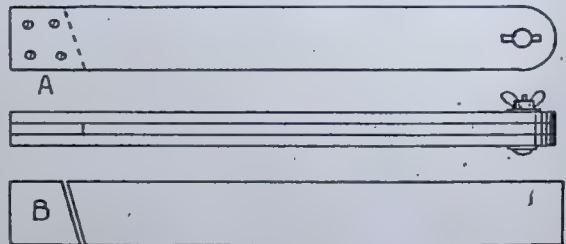
It is necessary to use thoroughly well seasoned timber at least $\frac{1}{4}$ in. thick, yellow pine or American whitewood being the best for general use. First coat the board with size made black with lampblack, and rub it down afterwards with pumice. Prepare the paint for the final coat by heating $\frac{1}{4}$ lb. of lampblack on a piece of iron until it becomes red; take it off and when cool crush it with a knife until quite fine. Mix the powder with $\frac{1}{2}$ pint of turps and apply to the board with a brush. If the surface should not be quite dark enough, rub down with pumice and apply another coat. This is a cheap and effective way of coating the board, and is equally suitable for renovating an old board. 73

To Cut Glass without a Diamond.

Small squares of glass may be cut to size with an ordinary three-sided taper saw file by breaking this off at the extreme point beyond the cutting portion. The best way to break the file is to lay it on a piece of iron which is quite solid, the part to be broken off hanging over the edge, when a smart blow with a hammer will do the trick, leaving three sharp points, each of which may cut the glass. The file is used in a similar manner to a diamond, and when once the cutting angle is found, it must be adhered to. Like the diamond the file will cut at one angle only. It would be absurd to say the file is as good as a diamond, but small pieces of glass can be cut quite easily. 98

Easily-made Bevel.

Plane up the edges of some $\frac{1}{4}$ in. or 3-16 in. fretwood to $\frac{3}{8}$ in. or 1 in. wide. Cut off three 8 ins. lengths, and saw a small piece off the end of one length as indicated at B. Place the pieces together, with the cut piece in



the middle, and then cramp them up tightly. Nail or screw the end A, bore a hole through the other and insert a small wing bolt and nut, and then round off to a semi-circle. The bevel will answer quite well for ordinary purposes. 89

Boring a Hole Through a Brick Wall.

One sometimes wants to bore a hole through a wall to carry bell wires or a speaking tube. There is an easy way of doing this by means of a length of gas-pipe of the same outside diameter as the required hole. Take the length of iron, and drive it straight into the wall, continually turning it round and withdrawing it every $\frac{1}{4}$ in. or so. Almost any thickness of wall may be pierced in this way. 85

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Nov. 5 to 15.—"The Englishwoman" Exhibition of Arts and Handicrafts, to be held in the Maddox Street Galleries, 23A, Maddox Street, Regent Street, London, W. Secretary, "The Englishwoman," 11 Haymarket, London, S.W.

Nov. 11 and 12.—Croydon Hobbies Exhibition, to be held in the Public Halls, George Street, and Wellesley Road, Croydon. Secretary, Miss Cooper, 10, Dingwall Road, Croydon, Surrey.

Nov. 14.—Teignmouth Amateur Guild of Handicraft Exhibition, to be held at St. Michael's Church House, Teignmouth. Secretary, Miss Pierison, Furzleigh, Teignmouth.

Nov. 24 to 26.—Exhibition of the Gentlewomen's Guild of Handicrafts, to be held at The Compton Hotel, Liverpool. Secretary, Miss Thomson, 3, Edward Street, Bath.

Dec. 2 to 5.—Worthing Arts and Crafts Exhibition, to be held in The Bedford Hall, Worthing. Secretary, Mr. C. B. Wickham, St. Cross, Valencia Road, W. Worthing.

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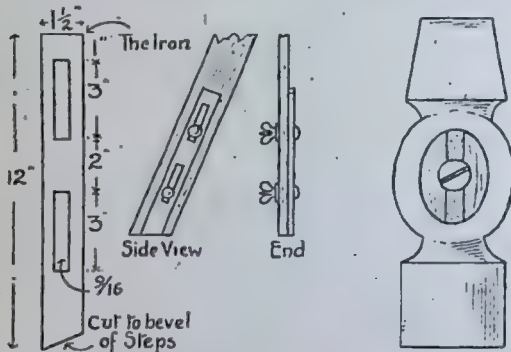
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HOW TO DO IT (Contd.).

A Safety Ladder.

Men who are engaged in cleaning large plate glass windows often find that, when the pavement slopes to the gutter, there is difficulty in keeping the steps steady. A reader sends us the following hint which he himself has successfully tried. Procure two pieces of flat iron, 12 ins. long, $1\frac{1}{2}$ in. wide and 5-16 in. thick. In these have two slots (3 ins. by 9-16 in.) cut as shown. Procure also four bolts with wing nuts, and at the lower end of each side of the ladder bore two holes to receive these. To avoid tearing the clothes the thumb screws should be on the inside. On a sloping pavement the irons may be lowered slightly so as to make the steps secure. See sketch below. 78



TO MAKE A LADDER SAFE. A TIGHT WEDGE.

To Fasten Wedge in Hammer Head.

A source of great annoyance and no little danger can be easily obviated by the insertion of a large headed screw in the centre of the wedge of any hammer whose head persists in flying off. The countersunk screw prevents any movement of the wedge, no matter how vigorously the hammer is used. 83

To Prevent Tools from Rusting.

The bugbear of all users of metal tools, especially amateurs, is the difficulty of preventing the tools from rusting. The best preventative no doubt is constant use, but this in many cases is impossible. If the tools are likely to be unused for some time, there is nothing better than a liberal coating of mutton fat, but if they are used fairly often, and laid by for a few days only, a slight coating of ordinary lubricating oil will be a sufficient protection. This must be renewed each time the tools are used. 102

Damp Walls and Pictures.

Many pictures are spoiled through the frames being in direct contact with the wall on which they are hung, particularly in newly built houses. This may be prevented by glueing a small disc of cork on each of the lower corners of the frame at the back, so that the cork touches the wall and prevents the dampness from reaching the frame and spreading to the picture. The discs can be made by cutting up ordinary bottle corks into pieces of a quarter inch thick; seccotine will fix them firmly. 103

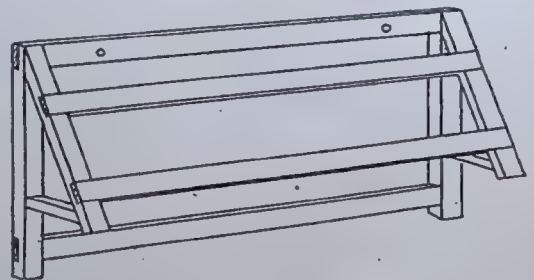
How to Sharpen Scissors.

The woodworker is often expected to be able to sharpen the household scissors, so it is as well to know exactly how this should be done. If the blades are screwed together, remove the screw, and place the edge of each blade in turn on the stone. It will be seen that the cutting edge is at an obtuse angle to the flat portion of the blade, and that the correct position on the oilstone will bring the flat portion of the blade nearly upright. Rub this edge up and down the stone until the steel bites along its length. There is no need to sharpen the flat side at all. When both the narrow edges have been sharpened the blades should be wiped and put together again, care being taken that the edges touch during the whole operation of closing them. Riveted blades are done in the same way, but owing to the blades being fastened together the sharpening will be a little awkward.

It does not always follow that a pair of scissors must cut after they have been sharpened, for they may require setting. On looking at the blades when they are together there should be a space between them in the middle, and when opened out it will be found that the blades curve inwards. If this inward curve is not enough the edges will not touch at all points. To remedy this fault either tighten up the rivet if slack, or if already tight slightly bend the blades inwards. 92

Troubles with Wood Planes.

When wood planes have been in use some time, especially if used badly, they do their work in a very erratic manner, sometimes taking too much wood and sometimes refusing to take any. The cause of this is the uneven wear of the face of the plane, which will be found to be hollow in width, and probably also in length, as well as being more or less twisted. The remedy is to carefully plane the face until these faults are non-existent. This is not an easy matter, the usual result of the first attempt being that as soon as one fault is put right another appears. To avoid this, the plane should first be made straight lengthways, then crossways; the twist can then be put right, and the result as regards the working of the plane will be a revelation. 101



A Simple Boot Rack.

This is a very easily-made rack which can be made from a few odd lengths of wood. Space for slippers and shoes is provided by screwing pegs to the back rail. Any wood about $1\frac{1}{2}$ in. by 1 in. may be used, and if stained with an ebony stain will look well. 72

MISCELLANEOUS ADVERTISEMENTS.

This column is intended for the use of readers who wish, to buy, sell, or exchange tools, materials, &c., for their own use.

Private advertisements are inserted at the rate of sixpence for 12 words, and halfpenny per word after. The rate for trade announcements is one shilling for 12 words and one penny per word after.

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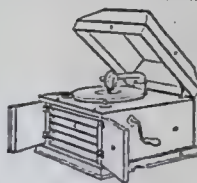
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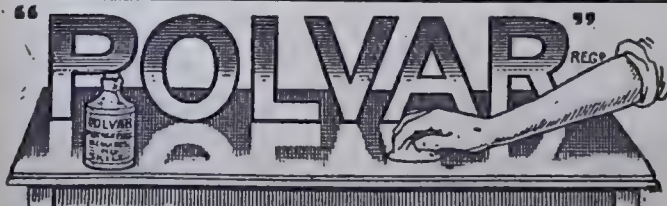
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Always mention "The Woodworker" when writing to Advertisers.

NOVEMBER PRIZE COMPETITION.

No. 5.—Dovetail Joint.

At Fig. 1 is illustrated a common dovetail joint, the separate pieces (A and B) being shown at Fig. 2. For the best models we offer seven prizes:—

First Prize, TEN SHILLINGS.

Also Six Prizes of Bound Volumes of THE WOODWORKER AND ART CRAFTSMAN for 1912.

The following conditions are to be observed:—The wood used should be pine. The model must be hand-made throughout, but the dovetail must not be glued.

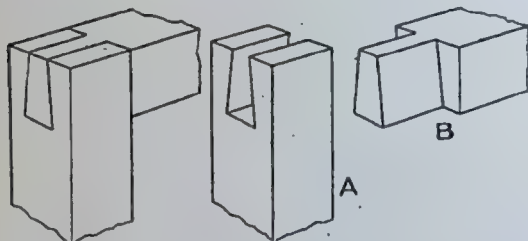


FIG. 1.

FIG. 2.—THE TWO PARTS.

No files or glasspaper to be used. The two pieces (A and B) should each be 4 ins. long and $1\frac{1}{2}$ in. square; width of dovetail to be $\frac{3}{8}$ in. at top and $\frac{1}{2}$ in. at lower end. Name and address of competitor to be written on model and also on WOODWORKER Coupon (available for November only) as on page iii. of cover.

Models, marked "Competition No. 5," must be received on or before Monday, November 17th.

Address:—Editor, WOODWORKER AND ART CRAFTSMAN, Sardinia House, Kingsway, London, W.C.

NOTICES.

Contributions.—The Editor invites correspondence and original contributions on all subjects relating to woodwork and other handicrafts. All MSS. should be accompanied by a stamped and addressed envelope for return if unsuitable.

Books for Review, price lists, tools, materials, etc., sent for inspection, enquiries and all correspondence relating to the literary portion of the Magazine should be addressed to the Editor.

Editorial Address: "The Woodworker and Art Craftsman," Sardinia House, Kingsway, London, W.C.

Advertisement Rates.—These may be had on application to the Advertisement Manager. All correspondence relating to Advertisements to be addressed to THE ADVERTISEMENT MANAGER, "The Woodworker and Art Craftsman," Sardinia House, Kingsway, London, W.C.

Subscriptions.—"The Woodworker and Art Craftsman," with Design Supplement, will be sent post free to any address in the Postal Union for 4s. per annum, payable in advance. Remittances should be made by postal order and addressed to the Publishers.

Designs.—"The Woodworker and Art Craftsman" Design Supplements may be had FREE with the current number of the Magazine for one month only. They are not given away with back numbers, but may be had separately, price Sixpence each.

Publishing Correspondence relating to sales of the Magazine, subscriptions, etc., to be addressed to the Publishers, Evans Bros. Ltd., Sardinia House, Kingsway, London, W.C. Telephone, Holborn 6443. Telegrams "Byronic, Estrand, London."

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Select three designs from the classes mentioned above, either three from one class, or one each from three classes; enclose a penny stamp for postage, and fill up the coupon upon the opposite page. Directly we receive it, we will send you the three designs without any cost whatever to yourself. We shall also keep your name and address, so that when we are making any similar free offers we can give you an early chance of securing the articles.

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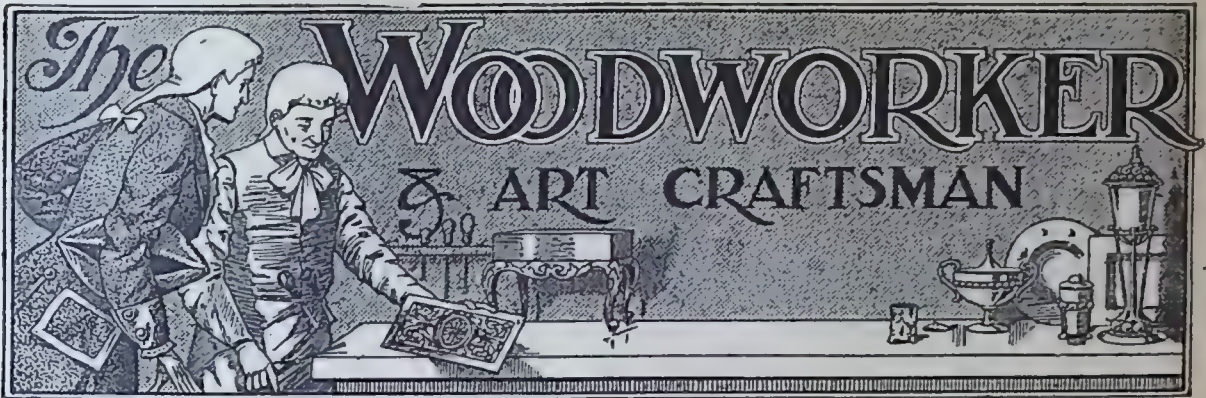
Not only do you receive three valuable working designs for yourself, but by sending us the name and address of your friend you will be doing him a real good turn, for we shall send him a free copy of THE WOODWORKER, which we know he will find as interesting and helpful as you find it.

Act Now!

Among the designs which we are giving to our readers are the following:—Inlaid Cabinet, Carved Bookcase, Carved Mantelpiece, Frames, Carved and Chip-carved Tables, Inlaid Workbox, &c., &c.

All the designs are original, practical, working designs, such as would be sold in the ordinary way at sixpence each.

Readers will realise at once that this is a most attractive offer. It holds good only so long as the stock of designs set aside for this purpose is unexhausted. So post your application to us now, as we are sure to have an enormous demand.

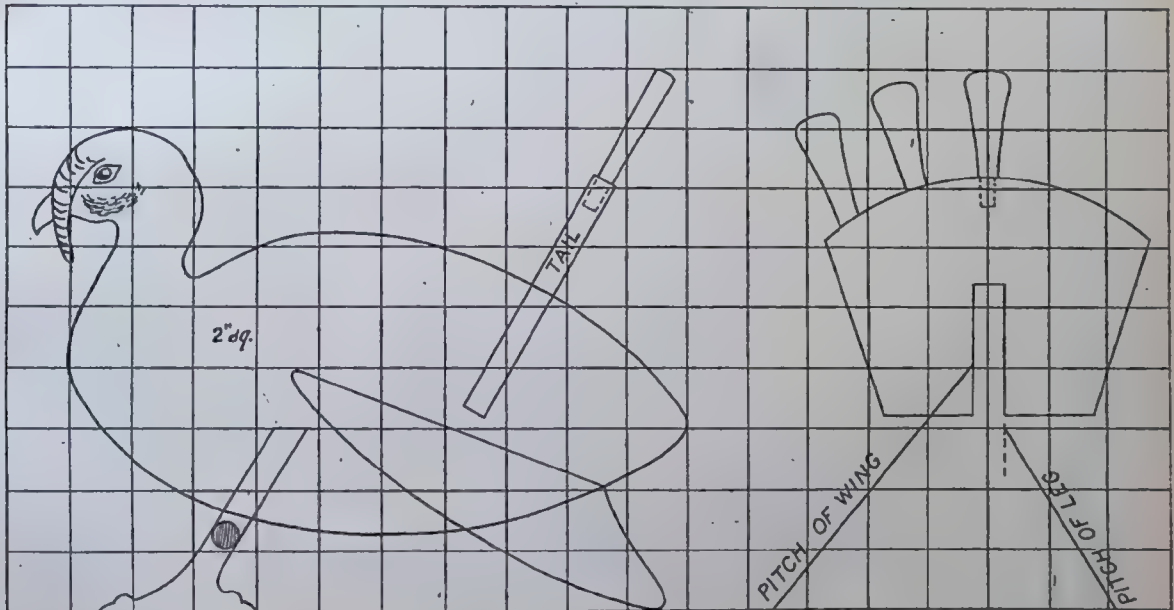


HOW TO MAKE CHRISTMAS TOYS.

1.—THE QUOIT TURKEY.

HOWEVER keen and enthusiastic we may be in our daily occupation, or in our favourite hobby, it is a delight to turn occasionally from one or other and devote a few spare hours to some different recreation. And as Christmas approaches surely

turned out at less than the price of a few purchased ones. The cost of material, indeed, is trifling, and if the worker can spare a few evening hours during the next three weeks he has the chance of making many a child happy at Christmas. It is with this in view that we have devoted one or two



CHRISTMAS TOY: THE QUOIT TURKEY.

The making of this seasonable Toy is described on the following page.

no mechanical pastime has more enjoyable possibilities than the making of toys. Why spend pounds on elaborately-finished toys when we can make better and stronger ones ourselves? Dozens of useful and fun-provoking toys can be

pages in this month's WOODWORKER to the construction of simply-made and serviceable toys, which are interesting not only to play with but also to construct. The Quoit Turkey illustrated here is described on the next page.

Next Number will be the First Part of a New Volume.

CHRISTMAS TOYS: QUOIT TURKEY (Contd.).



HERE we have an old friend in a seasonable disguise. The familiar game of quoits brought up to date! The body portion of our turkey is cut out of $\frac{7}{8}$ in. wood to the required shape. The wings and tail are $\frac{1}{4}$ in. and the legs are shaped up out of 1 in. timber. The five tail feathers

are shaped up and tenoned into the tail as shown.

The completed article is decorated by painting and varnishing as a turkey. Six indiarubber or rope quoits are purchased; the turkey is stood on the floor in the corner of the room and the game played in the ordinary way, the object of the game being to throw the rings or quoits on the tail feathers. The scale drawing on the preceding page is plotted in 2 in. squares so that any interested reader can easily reproduce it full size: r26

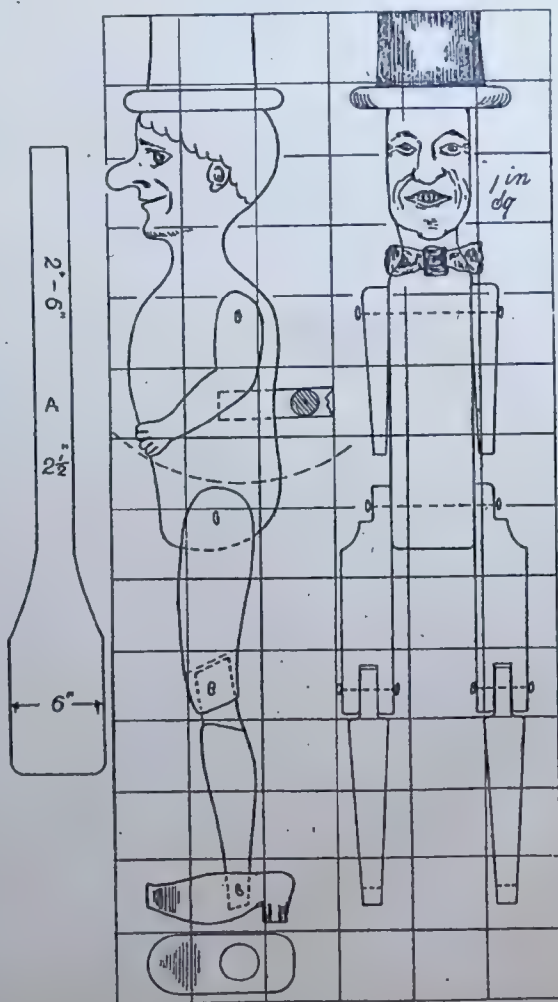
"TANGO TIM"—THE RAGTIME DANCER.

HERE we have an inexpensive toy, which can easily be made by any amateur or handyman, and will give unbounded delight to both young and old during the festive season. The method of using it is as follows. The operator sits on a chair or stool (preferably of the wooden bottomed type), places the narrow end of the battledore portion under him, leaving the remaining portion overhanging. Tango Tim is now taken, and the dowel, which is about 12 ins. long, is inserted in his back as shown in the elevation sketch. The dowel is held in the left hand in such a position that the doll's feet barely come in contact with the wide portion of the battledore, or base board. Now with the fingers of the right hand vibrate the base board by heavily tapping at point A. This will cause the base board to come in contact with the doll's feet and in this manner cause him to dance and cut the most laughable capers. Music should accompany his antics and a gramophone or piano should be requisitioned. "Iola barn dance," or the latest ragtime airs are suitable. The writer made eight of these figures last winter, and they caused more fun with both young and old than toys costing ten times their value.

MATERIALS required: One piece of birch, 14 ins. by 3 ins. by $1\frac{1}{4}$ in.; one $\frac{3}{8}$ in. dowel; one disused bobbin (a tailor's thread bobbin is most suitable); five strong ladies' hairpins; one 2-in. screw to fasten the bobbin on the head; and one lap board such as is used to wrap the cloth on in a tailor's shop.

HINTS ON MAKING.—The body and head cut be cut out with a fret-saw and sandpapered up; two glass beads form excellent eyes. The nose is carved up a little with a penknife or gouge, and then painted with red ink. The face is simply coated with a little clear French polish, and the portion representing the hair is blacked with ink or a mixture of French polish and lamp black. The whole of the body is blacked in a similar manner. The half bobbin which forms the tall hat is simply screwed on from the top. The limbs have small holes drilled or burnt through them with a red hot skewer, and are fastened with hair pins as shown. The mouth and eyebrows may be inked or put in with a red hot skewer, and a red bow tied around the neck. The drawing is plotted out

so that it can be reproduced full size in a quick and easy manner. The battledore is $\frac{1}{4}$ in. thick. 124



CHRISTMAS TOY: "TANGO TIM," THE RAGTIME DANCER.

“PATTY AND THE FIG.”

HOW TO MAKE CHRISTMAS TOYS (Contd.).

THIS little toy, which we may call “Patty and the Fig,” pictures a struggle between the female and animal, and can be easily put together and worked by hand, wind or steam pressure. Fig. 1 gives a perspective view of the toy; Fig. 2

WOOD AND MATERIALS.—The figures and gate are intended to be of 3-16 in. three-ply wood, the windlass and standard of deal, and the fan of three-ply wood or tin. A $\frac{1}{2}$ in. deal baseboard and some stout copper wire are other necessities.

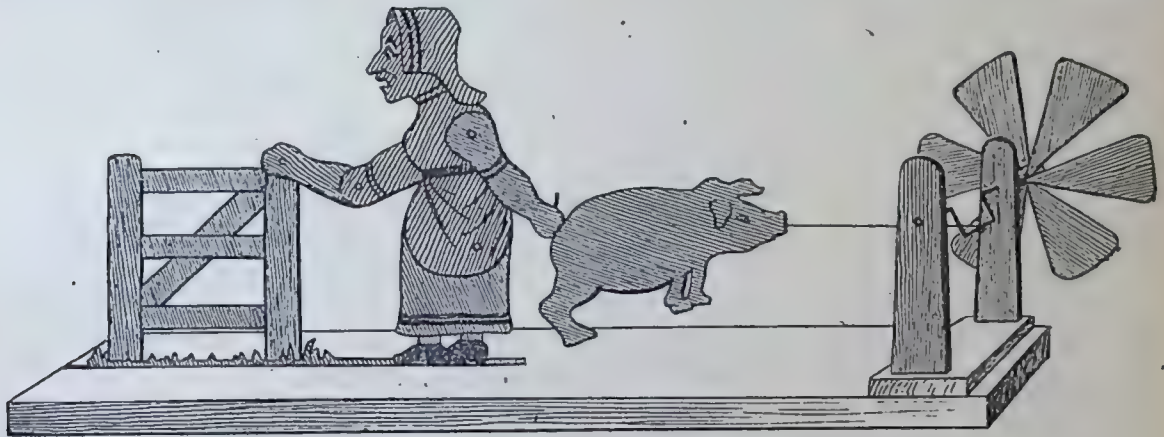


FIG. 1.—PATTY AND THE FIG.—PERSPECTIVE SKETCH OF TOY.

a detailed list of the working parts (squared for drawing full size), and Fig. 3, a hint or two as to

CONSTRUCTION.—In cutting out the parts of the working figures with the fret-saw everything should

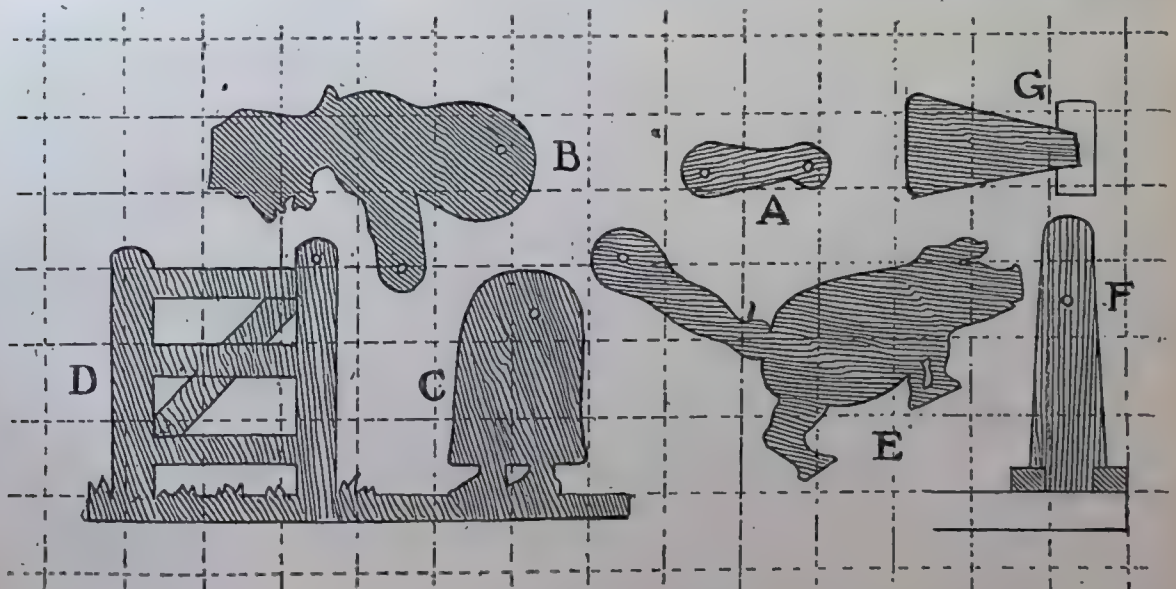


FIG. 2.—DETAIL OF PARTS.—THE SQUARES ARE 1 INCH.

mechanism. No difficulty should be found in drawing out the parts full size, anatomical accuracy not being essential.

prove plain sailing. Patty's figure is in three parts; the half arm A, the trunk and upper arm B, and the lower part C, the feet of which

THE MAKING OF CHRISTMAS TOYS.

"PATTY AND THE PIG" (Contd.).

are part of the ground line. The left arm and pig E are in one piece, the indication of the tail (which is presumably being grasped) being expressed by a piece of fine cord attached. The gate D is part of the ground line. The uprights of the windlass F, are, however, separately made, as

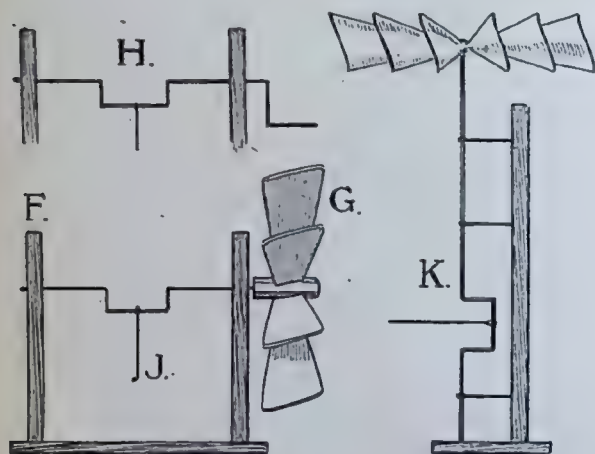


FIG. 3.—DETAILS OF MECHANISM.

at Fig. 3, out of $\frac{1}{4}$ in. wood. Size is about $3\frac{1}{2}$ ins. high by 1 in., tapering to $\frac{3}{8}$ in. above. They should be fitted into a base block, 4 ins. by $1\frac{1}{2}$ in. by $\frac{1}{4}$ in., which can be glued to the base board. The latter can be of $\frac{1}{2}$ in. deal, about 4 ins. wide by 14 ins. long, and should be grooved in the centre to the bare thickness of the ground line, so that this will be gripped tightly when glued and inserted.

When cut out the parts should be carefully holed with a gimlet or bradawl in the places shown, and the whole neatly smoothed with fine glasspaper. Before putting together it may occur to the artistically inclined to paint the lady and pig by way of making them more realistic.

The parts should be pivoted with knotted cord. A length of dressed fishing line is suitable, or twine with a rub or two of graphite on it will do. When knotted together the parts should work freely, but must not be so loose as to wobble. Anything of the kind may be corrected by threading a flat glass bead between.

If it is desired to work the toy by hand the windlass may be finished with a simple handle, as at H, Fig. 3; if by wind a fly-wheel can be fitted to the windlass (G), power being got from a pair of bellows. The windlass is connected to the pig's nose by a short length of copper wire J, eyed on to the windlass rod loosely so that it revolves freely on the part to which it is attached;

the other end is flattened and bent for connecting as in Fig. 1. If a tin flywheel is made about 4 ins. diameter it can be soldered in position, but if of wood a piece of $\frac{1}{2}$ in. wood should be rounded and fitted to the flattened end of windlass rod, the fans being inserted and glued into slanting cuts in the hub thus formed. Alternatively the fan may be fitted vertically in the manner indicated at K.

ACTION OF TOY.—The "pull and push" action of the crank to which the pig is attached by the eyed wire suggests something of a battle royal. The pig, held by the tail, makes a despairing effort to jump away, and in so doing bends the woman back; but, holding on to the gate, she recovers herself and hauls piggie back in turn. If worked by hand, without the windlass and flywheel, behind a pane of frosted glass the action will appear very realistic, and, the principle being quite simple, it is capable of development by adding another figure to those indicated. For instance, Pat might be introduced holding Patty with one hand and the gate with the other, both figures apparently endeavouring their utmost to master the refractory porker.

140

THAT LITTLE CHAP OF MINE.

To feel his little hand in mine; so clinging and so warm,
To know he thinks me strong enough to keep him safe from harm;
To see his simple faith in all that I can say or do,
It sort o' shames a fellow, but it makes him better, too.

And I'm trying hard to be the man he fancies me to be,
Because I have this chap at home who thinks the world of me.
I would not disappoint his trust for anything on earth,
Nor let him know how little I jes' naturally am worth.

But after all it's easier that brighter road to climb,
With the little hand behind me to push me all the time,
And I reckon I'm a better man than what I used to be,
Because I have this chap at home who thinks the world of me.

From *The Carpenter*.

NOTE:—Our Special article on Toboggan-making has unavoidably been held over till next month. The article will deal with several varieties of serviceable toboggans.

Toboggan-Making will be a feature of the January Number.

THE WOODWORKER PRIZE COMPETITIONS.

INTERESTING JOINT EXERCISES.

MONEY PRIZES.

OUR Competitions are booming. The November entries were larger than ever; indeed the Dovetail Joint Competition (No. 5) proved the most successful of any competition ever organised by THE WOODWORKER.

These Competitions are popular because they call for the exercise of skill, and yet are not outside the scope of the amateur worker; they

help the tyro towards efficiency, and interest the more advanced worker because skill is necessary.

For the December Competition we have chosen a Dovetailed Mitred Joint, slightly more difficult than the simple Dovetail Joint set for competitors last month. Full particulars are given below. Enter for this competition yourself and tell your friend about it.

COMPETITION PRIZE AWARDS.

No. 5.—DOVETAIL JOINT.

For the best examples of a common dovetail joint, made to the sizes given in last month's WOODWORKER, the prizes are awarded as follows:—

FIRST PRIZE, TEN SHILLINGS—A. B. HENBEST, 116, Frinton Road, East Ham.

SIX PRIZES, each a Bound Volume of THE WOODWORKER for 1912:—

F. SEDDON, 2, Adelphi Villa, Oban.

A. C. PAGE, 21, Gwydir Street, Cambridge.

A. H. ANDREWS, 121, Plimsoll Road, Finsbury Park, London, N.

W. B. BARR, 5, Loanhead Street, Kilmarnock.

CHARLES A. STEER, 4, Galpin Street, Modbury, Devon.

F. E. MARTIN, 8, Avenue Road, Southall, Middlesex.

CERTIFICATES OF MERIT, with Special Mention, are awarded to:—

A. J. Padgham, F. Heal, M. Chivers, E. J. Kidgley,

E. W. Gent, E. R. Coombes, C. J. Morgan, W. W. Peacock, G. Denyer, W. Bennett, A. J. Rees, A. C. Stevenson, S. F. Dodds, R. Moore and J. H. Millett.

HONOURABLE MENTION is given to the following:—

G. W. Tembey, H. T. Spilsbury, J. H. Pollard, J. G. Sinclair, J. L. Crombie, W. F. Jacob, G. Cook, H. M. Ridge, B. S. Morgan, J. V. Tyson, J. Ratcliffe, J. W. Davis, E. W. Green, A. Voelkel, S. E. Epton, A. S. Lewis, P. J. Rudge, William Rogerson, P. H. Baker, P. R. Verring, T. M. Addy, A. R. Carpenter, T. J. Turner, S. E. Howse, G. W. Neasham, A. C. Edyvane, F. Chick, John Dunbar, William McIntosh, Hugh Harkness, Thomas Davies, and E. G. Okey.

This has been a very successful competition, a very large number of readers entering. The joint was no doubt a comparatively simple one to form, but in no case was an inferior example sent in. So high, indeed, was the standard of work that the Judges had great difficulty in determining the order of merit.

DECEMBER PRIZE COMPETITION.

No. 6.—DOVETAIL AND MITRED JOINT.

For the best examples of the dovetail and mitred joint shown here we offer Seven Prizes:—

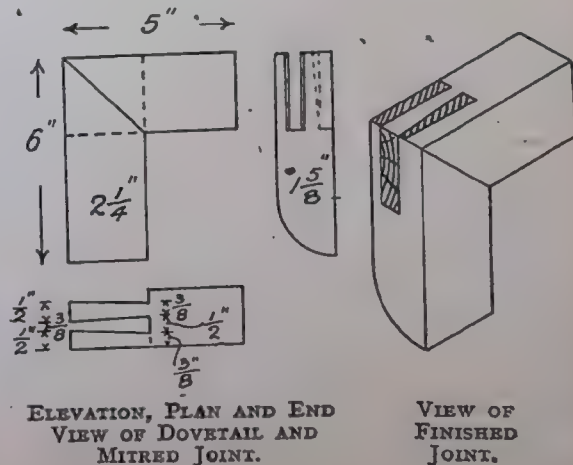
First Prize, TEN SHILLINGS.

Also Six Prizes of Bound Volumes of THE WOODWORKER for 1912.

The following conditions are to be observed:—The wood used should be yellow pine or red deal. No files or glass paper are to be used. The sizes given in the illustrations must be worked to. Name and address of competitor should be written on the example, and also on WOODWORKER Coupon (available for December only) on page iii. of cover.

Examples, marked "Competition No. 6," must be received on or before Saturday, December 13th.

Address:—Editor, THE WOODWORKER, Sardinia House, Kingsway, London, W.C.



A BEDROOM LUXURY.

SHAVING STAND WITH CUPBOARD AND DRAWERS.

ALTHOUGH not usually included amongst the pieces comprised in the ordinary bedroom suite, a shaving-stand is a most desirable addition to the appointments of the bedroom.

THE WOOD suggested here is mahogany, with or without inlaid banding, but walnut, oak, birch, basswood, or satin walnut can also be utilised.



FIG. 1.—A NEAT AND USEFUL SHAVING STAND.

Dimensions over all are 16 ins. wide by 14 ins. deep, and 3 ft. 6 ins. high to table top, the upper mirror portion rising just short of an additional 21 ins. From Fig. 1 it will be seen that a special cupboard with fall-down flap is allotted to the shaving requisites so that these may be kept close at hand, but out of sight when the flap is up. The three drawers will prove useful for strop and other sundries. The towel rail is not always fitted, but is a useful adjunct.

THE TABLE TOP (A, Fig. 3) will require glue jointing up to finish 16 ins. by 14 ins. by $\frac{1}{2}$ in. thick, or may be $\frac{3}{4}$ in. thick if a five member mould is preferred; it will be screwed into position from the underside.

THE FOUR LEGS (B) can be got out to finish 3 ft. 6 ins. long by $1\frac{1}{2}$ by $1\frac{1}{2}$ in. They will be grooved and mortised for carcass sides, slotted for dovetails on rails (D) and mortised for tenons on rail (E) and drawer bearers (F), the lower 10 ins. or so being tapered away to $\frac{3}{4}$ in. by $\frac{7}{8}$ in. to receive brass wheel castors.

THE SIDES (C) can be of $\frac{3}{4}$ in. or $\frac{1}{2}$ in. stuff, fitted from pieces 2 ft. 4 ins. by 12 ins. If the grain is to run vertically the sides can be grooved into the legs and be held by the dovetailed rails (D), at top; at the bottom they can be screwed to a lower drawer runner (G), which can be dowelled or tenoned into legs as well as tongued into the corresponding bearer (F.) If the grain is to run horizontally the legs can be grooved and mortised for corresponding tenons on the sides. The front and back stretcher rails (D) are indicated as dovetailed into legs and sides, and can be allowed two pieces 15 ins. by $2\frac{1}{2}$ ins. by $\frac{3}{4}$ in.

THE CUPBOARD BOTTOM (E) can be fitted from a piece of $\frac{3}{4}$ in. stuff 15 ins. by 14 ins., the back legs and sides being grooved for it to be pushed home from the back, and the front edge notched back $\frac{1}{2}$ in. to enter a corresponding notch in front legs to give it a bearing. Or the rail (E), say $1\frac{1}{2}$ in. wide, can be tenoned into legs and have the bottom (of $\frac{1}{2}$ in. stuff) dropped in to rest upon the $\frac{3}{4}$ in. ledge projecting inwards beyond the legs as a bearing for it.

THE THREE DRAWER BEARERS (F), 15 ins. by $1\frac{1}{2}$ ins. by $\frac{3}{4}$ in., are intended to be neatly double-tenoned into legs and notched to fit up to the sides, the inner edge being also grooved for dustboards and runners to enter.

THE RUNNERS (G) will be of $\frac{3}{4}$ in. thickness, and six pieces will be required 12 ins. by 2 ins. grooved to match the bearers (F) and tongued to enter the grooving in the latter. These runners can be glued into position on sides, or grooved into them and nailed at back.

SIX SLIDES (H) will also be required, 12 ins. by 1 in. to butt flush between the legs, behind the sides, so that the drawers glide freely home.

THE DUSTBOARDS (I) are not absolutely necessary, but are preferable as a protection for the contents of the drawers against the ever penetrating pest. Three pieces, 12 ins. by 12 ins. by $\frac{1}{2}$ in. will come in handy for these, to be pushed home into grooves from the back as indicated.

THE SHAPING (J), if well fitted between legs, can be glue-blocked into position from behind with a screw passed into each leg. It can be cut to shape from a piece 14 ins. by $1\frac{1}{2}$ ins. by $\frac{1}{2}$ in.

THE BACK can be of $\frac{1}{2}$ in. matching 4 ins. wide, but a much improved appearance is obtained by fitting a panelled framing as indicated. For this two stiles (K) will be required 2 ft. 6 ins. by 2 ins.

BEDROOM SHAVING STAND (Contd.).

by $\frac{3}{4}$ in. mortised top and bottom and grooved for panel. The two pieces for rails, 15 ins. by 2 ins. by $\frac{3}{4}$ in., can be cut with tenons each end to enter stiles, with corresponding grooves for a panel of $\frac{1}{2}$ in. or $\frac{1}{4}$ in. stuff with bevelled edges.

CUPBOARD FLAP (N).—Dealing next with the cupboard, a piece may be got out 13 ins. by 9 ins. by $\frac{3}{4}$ in. for cutting to a neat fit. If veneered care should be taken to do this both sides to equalise the pull, and if to be finished with banding an $\frac{1}{2}$ in. satinwood cross band with black and white lined edges or a $\frac{3}{8}$ in. chequered band will give a good effect. Those who have not yet taken up this most interesting branch of their hobby should procure our handbook on the subject, "Veneering, Marquetry and Inlay" (7d. post free).

For the drawer sides six pieces 13 ins. by 4 ins. by $\frac{1}{4}$ in. should be cut; for the backs three pieces the same size, and for the bottoms three pieces of $\frac{1}{4}$ in. stuff to fit.

THE SHAVING GLASS.—Shaving stand mirrors are often shield shaped or circular, or may be oval, but as a framing of straight sides will be simpler to work a pier-shaped mirror about 13 $\frac{1}{2}$ ins. by 10 $\frac{1}{2}$ ins. is sketched. For this the capping mould (P, Fig. 4) can finish $\frac{3}{8}$ in. or $\frac{1}{2}$ in. The mirror frame will require two stiles (Q) 15 ins. by 1 $\frac{1}{2}$ in. by $\frac{3}{4}$ in. and two rails (R) 12 ins. by 1 $\frac{1}{2}$ in. by $\frac{3}{4}$ in. to be mortised and tenoned together, with ovolo moulded edge if desired, and rebated for glass. The latter (U) should be bevelled 1 in., and can be wedged into the rebate or loosely held by small

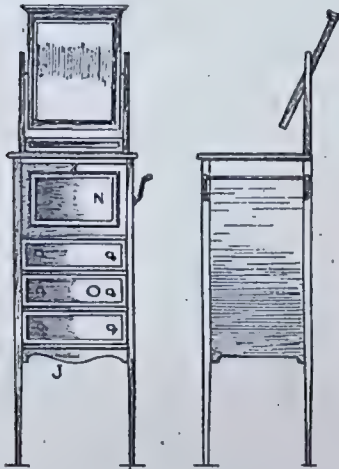


FIG. 2.—ELEVATIONS.

The Fall Front may, if preferred, be framed up of two stiles 9 ins. by 1 $\frac{1}{2}$ in. by $\frac{3}{4}$ in., and two rails 13 ins. by 1 $\frac{1}{2}$ in. by $\frac{3}{4}$ in., mortised and tenoned together and grooved to receive a panel of $\frac{1}{2}$ in. or $\frac{5}{8}$ in. stuff, which should fit flush at back and may be finished with a 1 in. bevel in front. A couple of 2 in. brass hinges should be fitted as at E, Fig. 3, so that the flap shuts up as in the section (N), to be held in position by a bullet catch and a drop handle for finger hold. When down the flap will be held horizontally by lengths of brass chain and a couple of flanges screwed one to edge of flap and one to inside leg.

THE DRAWER fronts (O) will look well if all made equal in size, but the lower one may be deeper if preferred. Stuff to finish $\frac{7}{8}$ in. thick net should be used for these, to be routed for the mitred chequered or satinwood crossbanding, and fitted with two 1 in. brass knob handles to each front, with or without two lever locks as preferred. Three pieces 13 ins. by 4 ins. deep will suffice.

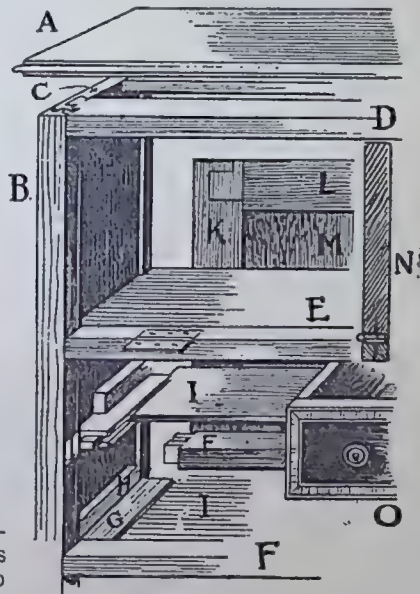


FIG. 3.—DETAIL OF CUPBOARD PART.

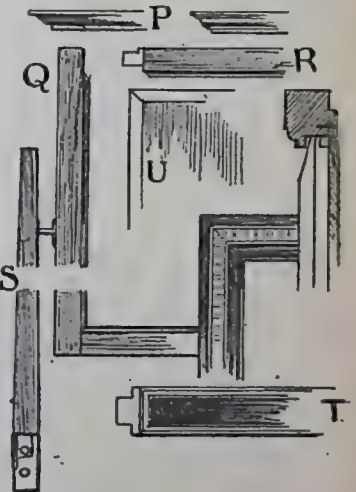


FIG. 4.—DETAIL OF UPPER PART.
glued blocks; it may be backed with $\frac{1}{8}$ in. stuff with the edges rounded off, and screwed on with round-headed brass screws.

The frame will be enhanced if inlaid with satin-wood banding. Before inserting the mirror the rebate should be given a coat of black to prevent it reflecting unpleasantly. The frame is swung by a pair of patent movements, obtainable at most furnishing ironmongers for a few pence.

THE STANDARDS (S) may be got out from pieces 17 ins. by 1 $\frac{1}{2}$ in. by 1 in. face, tapered at sides and front to $\frac{3}{4}$ in. by $\frac{3}{4}$ in. at top. The lower 3 ins. can be halved to fit into, and be screwed, to carcass back and mortised to receive the tenons on the lower rail (T). This latter, 14 ins. by 2 $\frac{1}{2}$ ins. by $\frac{3}{4}$ in. will also be greatly improved if inlaid with lines or banding along the edges.

Stained to a rich Sheraton colour and bright polished the result should amply repay the worker for the time and labour expended.

CARVING TURNED WORK.

TWO WOOD-CRAFTS COMBINED.

TURNED work is a form of ornament which can be applied to a wide range of wood-work in varying degree of elaboration. Much of it can be successfully used as turned work pure and simple, that is, without any further decoration than its own contour affords. There is, however, a large amount of

used for the carving, these being : No. 5 by 5-16 in., No. 6 by 3-16 in., and No. 10 by 1-32 in. In turning this pin tray do the back first; the recessing affords opportunity for fixing to the face plate, so that the face of the tray may be done. The tools need full corners, not rounded edges.

Fig. 2 gives a serviette ring which, first of all, affords a very useful exercise in turning. The tools needed to execute the carving are : No. 2 by 5-16 in. and No. 5 by $\frac{1}{4}$ in.

Fig. 3 gives a drawing of a chair spindle or stretcher, ornamented in a simple but effective manner. The drawing will have to be made on the wood itself, a comparatively simple matter; and for carving purposes it is better to work in two blocks of wood, each having holes in them just large enough for the end of the stretchers. The tools required here are : No. 39 by 5-16 in., No. 5 by $\frac{3}{8}$ in., and No. 5 by 3-16 in.

Fig. 4 gives an object that would do for a candle-stick or an electric light standard. It is built up of three parts : the base, the shaft, and the capital.

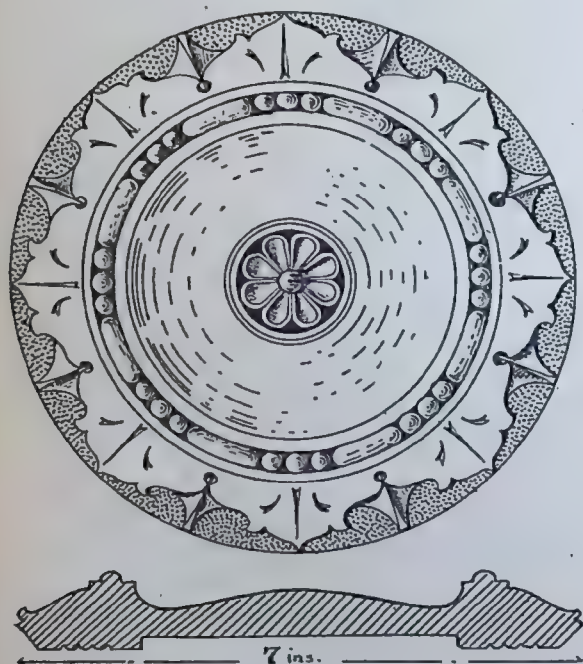


FIG. 1.—PIN BOWL OR TRAY.

turned work that calls for a different kind of ornamentation in order to give the amount of contrast that appears to be necessary to secure the fullest effect.

Balusters, newels, bed poles, table legs, chair spindles, pendants, finials, pin bowls, salad bowls, candle sticks, electric light standards, serviette rings, circular photograph frames, are all objects that readily occur to one, and the list can be extended much further.

Carving upon a turned surface resolves itself into simple surface carving, the shaping of the masses having already been done in the lathe. The sketches given here will explain themselves. They cover a fairly wide number of examples of different classes of carved turned work, and are suitable for adaptation in many ways.

Fig. 1 is a pin bowl or tray, the illustration showing a plan, and also a section indicating the character of the turning. Only three tools are

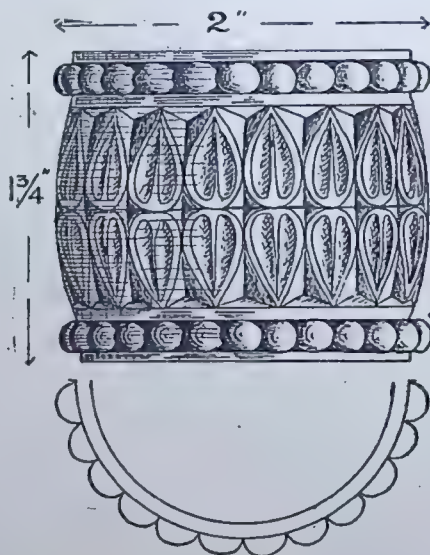


FIG. 2.—SERVIETTE RING.

All these parts are turned and afterwards carved, the design being easily drawn on the parts after the turning is done. The base and capital have been left plain as a contrast to the shaft.

A V tool, No. 39 by 5-16 in. and a No. 5 by 3-16 in., are all the tools needed. The best plan is to cut in the plain upright reeds with the V tool first, and then the outline of the spiral band. Afterwards round the reeds, and cut the band to its surface shape.

CARVING TURNED WORK (Contd.).

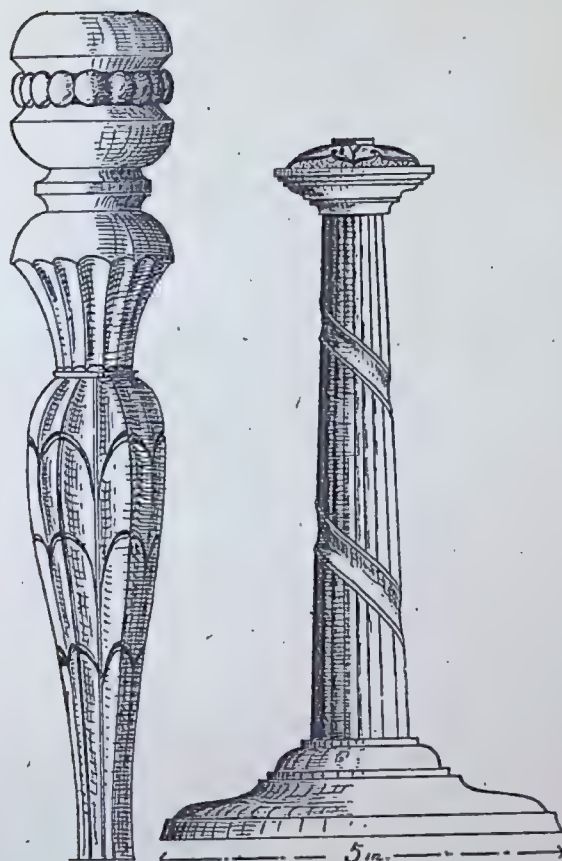


FIG. 3.—CHAIR SPINDLE OR STRETCHER.

FIG. 4.—CANDLESTICK OR ELECTRIC LIGHT STANDARD. 9 INS. HIGH.

The capital is hollowed for the brass or copper sconce to hold the candle, or prepared to hold the electric light globe. Pins are left turned upon each end of the shaft, and are glued and wedged into cap and base.

To finish the whole object, glue a circle of baize or felt under the base. If the stand is done in oak, it may be fumed and wax polished. If in American walnut, oil it with raw linseed oil, and when dry wax polish. The same applies to all the other articles.

It will be noticed that in no case does the carving interfere with the outline or contour of the surface. On the contrary, it emphasises both—an important point to note.

With regard to the Tools mentioned, No. 2 is a Skew, No. 5 a Flat Gouge, No. 6 a Quicker Gouge, No. 10 a Viner, and No. 39 a V-Parting Tool.

Peasant Woodcarving.

AMONG the Italian peasantry woodcarving has always been popular. A shepherd, for example, will take a block of the hardest wood, and with patient labour fashion from it the rough form of a saint for his village church. It is a common practice, too, to carve verses on shepherd's staves and on the wood of marriage chests. Spoons, spinning spindles, wood drinking cups, small caskets, cheese and butter moulds, milking stools, goat and cow yokes, and other objects are also ornamented with chip work. In the homes of many peasants will be found richly-carved spinning wheels, chairs, tables, wool-winders, distaffs, table glass supports and numerous other articles of daily use. Many beautiful illustrations of these—in addition to fine examples of Italian peasant costume, jewellery, lacework, embroidery, metalwork, pottery, etc.—are given in the Special Autumn Number of *The Studio* (5s. net), "Peasant Art in Italy." The series of special volumes on European peasant work issued by *The Studio* is of great interest and value to craftsmen; and this one, with its twelve-coloured plates and 450 illustrations, should be secured before the number, like several of its predecessors, is out of print.

IMPORTANT ANNOUNCEMENT.

NEXT number of *THE WOODWORKER* (January, 1914) will be the first part of a new volume, and we have made special arrangements for three entirely new series of articles which, in interest and practical usefulness, will be of the greatest value to readers. One of these serials will deal with the making and application of **CABINET WORK JOINTS**. On the joints used for carpentry and joinery we have an excellent sixpenny handbook, but there are many readers to whom detailed instructions regarding the smaller joints required for all kinds of cabinet work will be of immediate service.

A second series will deal in a new and particularly helpful way with **WOOD CARVING**, more

especially in its application to home-made cabinet work. The directions will be of such a character that, from them, the reader who has no previous knowledge of carving will be able to add some appropriate and effective carved decoration to the articles of furniture he makes.

Then, following on our popular serial on **Nursery Furniture**, we begin in January the first of a series of articles on **KITCHEN FURNITURE AND FITTINGS**, and throughout the year we shall spare no effort to make every number of *THE WOODWORKER* of practical usefulness to woodworkers. Readers will do their friends a real service by bringing our new volume to their notice. The January number will be ready on December 22nd.

CARVED BRACKET AND INLAID CABINET.

THE DESIGN SUPPLEMENT.

ON the Design Supplement which accompanies this month's *WOODWORKER* will be found two working patterns, one for a carved wall bracket, the other for an inlaid cabinet suitable for standing on a sideboard or side table.

Carved Bracket.

The carved bracket, shown here at Fig. 1 is 18 ins. in length and fully 8 ins. in width. For it

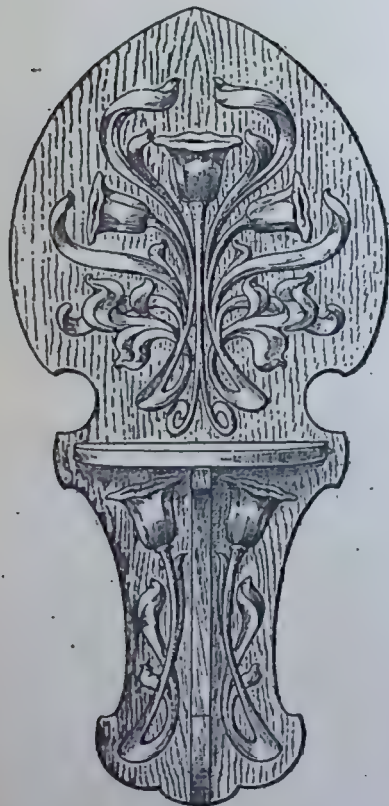


FIG. 1.—CARVED BRACKET, 18 ins. by 8½ ins.

a sound piece of well seasoned wood 18½ ins. by 8½ ins. and ¾ in. thick will be required for the back. The shelf is 5½ ins. by 3 ins., finishing to ¾ in. thick, and the support is about 7½ ins. by 3 ins. As the latter will be carved on both sides the thickness must not be less than ¾ in. to 1 in. American walnut is one of the most suitable woods to use, but oak may be chosen if preferred.

The design is not one which calls for bold relief. At the same time spirited carving is wanted. If ¾ in. wood is used for the back, the ground may be taken down to ¼ in. This will leave the highest

points of relief at ¾ in., and with this depth there is ample scope for spirited modelling. On the drawing the edges of the bracket back are shown square, but they may be gently chamfered (not more than ¼ in.) if desired.

The shelf and support should show an edge thickness of 5-16 in. or ¾ in. The shelf is 5½ ins. long, but the semi-circle should be kept full, so as to allow a width of at least 3 ins. The edge may be plain, but will look better if chamfered.

As the support is to be carved on both sides

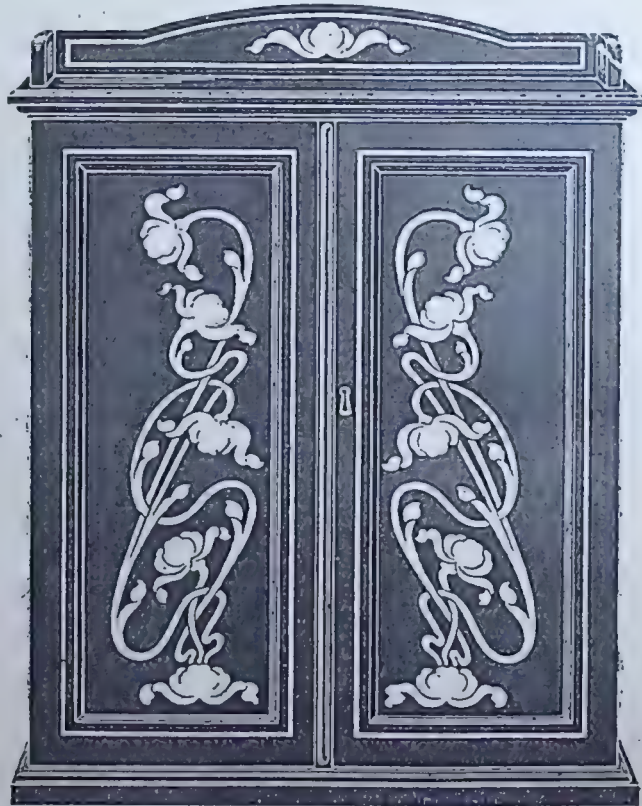


FIG. 2.—INLAID CABINET, 20 ins. by 15 ins.

ample thickness must be allowed. The ground may finish to 5-16 in., with relief on each side to about ¼ in. or 5-16 in.

Shelf and support are glued in position and screwed from behind. A brass bracket-eye will afford means of hanging the finished bracket to the wall.

Inlaid Cabinet.

To readers who enjoy the making of a light piece of cabinet work, with good finish, the design for an

inlaid table cabinet (Fig. 2) should appeal. The article, 20 ins. in height by 15 ins. wide, is intended for standing on a sideboard, mantelshelf, dwarf cabinet or bookcase, or on a side table. It may be fitted, as required, as a medicine cupboard or for a smoker's outfit; or it could be utilised as a stationery case or for other purposes.

Before giving a few notes in regard to construction we just wish to point out that the design is not merely intended for those who may be expert inlayers. It may be carried out in five different ways as follows:—

PLAIN CABINET.—Made in oak or walnut, or even in whitewood (stained), the cabinet will prove

will have to be kept light and the relief low, but with careful modelling a beautiful cabinet would be produced.

A FULLY INLAID CABINET, as shown, with the inlay cut either in marquetry veneers or in the solid, will form one of the most handsome articles that a reader can make. Mahogany is the best wood to use, the polished finish being to a Sheraton colour. Whether a plain or ornamental cabinet is to be made, however, the construction work is practically the same, and in regard to this a brief description of the parts will suffice.

THE DOORS (A. Fig. 3), which measure 16 ins. by 7 ins., are framed up of stiles and rails to finish

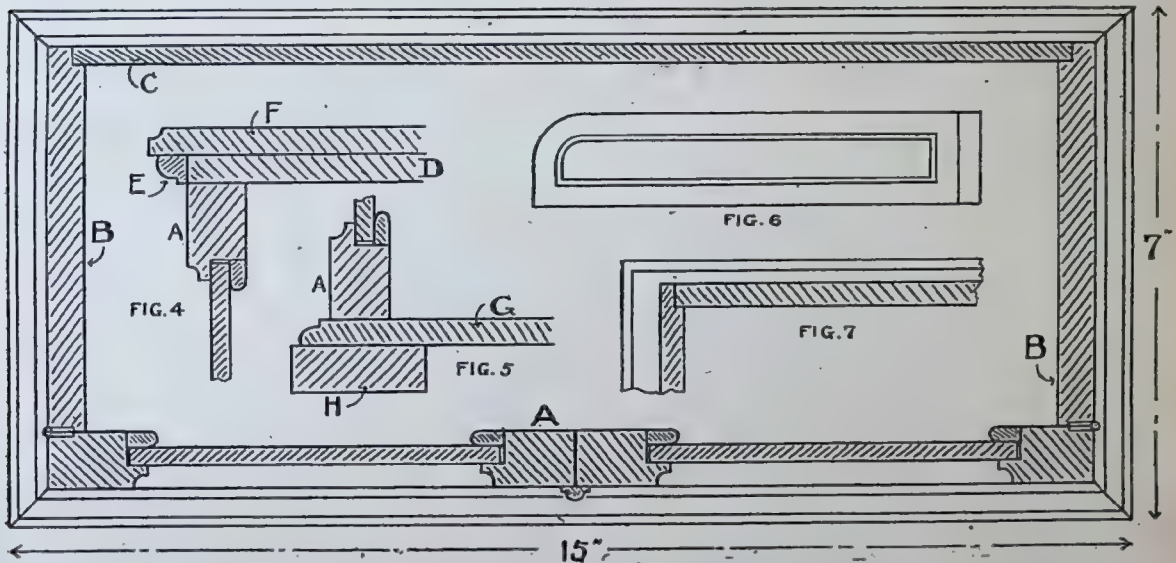


FIG. 3.—SECTIONAL PLAN OF INLAID CABINET.

FIG. 4.—SECTION OF TOP.

FIG. 5.—SECTION OF BASE.

FIG. 6.—SIDE RAIL.

FIG. 7.—PART SECTION OF RAILS.

a most useful one. The door panels will be plain, and no difficulty will be found with the construction.

CABINET WITH INLAID LINES.—Carried out in mahogany and finished to a Sheraton colour, a handsome cabinet can be made by omitting the ornamental inlay, but by introducing the narrow inlaid lines shown. The door frame and the top rails will have the lines as indicated on the design, and the door panels could have similar lines or bands (about $\frac{1}{4}$ in. or $\frac{3}{4}$ in. in from the frame), added to brighten them.

OVERLAID CABINET.—Fretcutters, who can do a bit of cabinet work, might make a cabinet in American walnut and carry out the ornamental work as an overlay instead of an inlay, xylonite or thin wood being used. The door panels might be of a darker wood.

CARVED CABINET.—Although not designed specially for carving, the door and back rail ornaments could be carved instead of inlaid. The work

14 ins. by $\frac{3}{4}$ in., a hollowed lip being run along the inner edges. The panels may be $\frac{1}{4}$ in. thick. The astragal ($\frac{3}{8}$ in. by $\frac{1}{4}$ in.) should have the bead stopped at each end, in order to prevent it from overlapping. The doors are hinged over the ends.

THE ENDS (B) are 16 $\frac{1}{2}$ ins. long, 5 $\frac{1}{2}$ ins. wide and $\frac{1}{2}$ in. thick. They are rebated to take the back (C), and are dovetail slotted for the carcass top (D, Fig. 4). The carcass depth of cabinet, over doors, is 6 ins.

BACK (C) may be $\frac{1}{4}$ in. thick, in one or two pieces.

THE CARCASS TOP (D, Fig. 4) is 14 ins. by 6 ins. and $\frac{3}{4}$ in. thick, dovetailed to ends. Its edges all round are lined with a $\frac{3}{4}$ in. by $\frac{3}{4}$ in. mould (E), which may be glued on.

TOP (F) is 15 ins. by 7 ins. by $\frac{3}{4}$ in., with hollowed top edge as indicated. It may be glued to carcass top and screwed from below.

(Continued on page 342.)

Special Articles on Practical Woodcarving begin next month.

NURSERY FURNITURE.—VII.

THE CHILDREN'S WARDROBE.

AS in every nursery there is a tendency towards disorder, it is as well to provide—apart from other furniture—a special cupboard to receive overalls and other lighter articles of attire, together with a space below for boots and shoes, or (if preferred) for toys. The plainest of cupboards might serve in this respect, but as size alone will make the article important in the room it would be as well to treat it with an eye to some simple artistic effect, which might be achieved on the lines of the sketch, Fig. 1

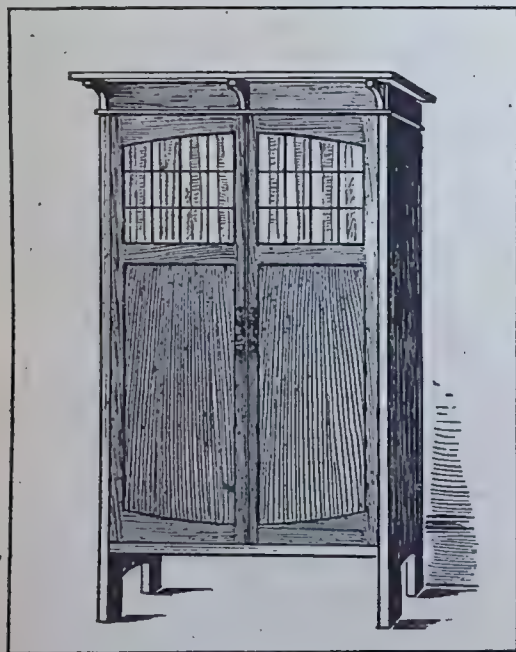


FIG. 1.—THE NURSERY CUPBOARD.
Size, 3 ft. wide by 6 ft. 3 ins. high.

This shows the top projecting in front with bracket supports, and the doors with panels slightly shaped and fitted with leaded lights above to relieve them from plainness. The effect may be enhanced if the glass is backed with pleated silk or other suitable material. The lower part of cupboard is also raised about 9 inches above ground for the convenience of sweeping underneath. With regard to interior fittings these may vary according to the dictates of personal convenience. If trays are to be fitted the doors should be hinged on the ends, so that the trays may slide forward freely. If shelves are fitted it will probably be more convenient to have two of these above and reserve the space immediately under for hanging

purposes. Height for the cupboard may be 6 ft. 3 ins., width 3 ft., and depth, back to front 20 ins. over carcass.

Wood and Materials.

Oak, walnut, mahogany, birch, bass and pine are all suitable woods, but for general purposes oak is suggested; it may be left its natural finish, unstained, or may be oiled and wax polished. The cost of the necessary wood (oak) would be about 25s., which may vary a trifle either way according to locality and quality selected. The leaded lights indicated in sketch would require to be specially made, and when ordering from the local glazier an exact template of the sight opening of upper panels should be supplied to him with the order. The cost should be approximately 5s. the pair. The cost of glazing these upper panels can be lessened if Muranese glass at 6d. per square foot is used instead of the leaded panes; several tints, such as mauve, buff or pink, are obtainable if preferred to white.

Construction of Carcase.

SIDES.—Proceeding to get out the stuff the carcass sides (A, Fig. 2) will require glue jointing up to 20 ins. wide, or 18 ins. wide may be made to serve satisfactorily. The wood should finish not less than $\frac{7}{8}$ in. thick, and a length of 6 ft. will allow a trifle for levelling, should this be necessary after the trial fit-up. The top edge, after being carefully squared, will be slotted for the dovetail pins on B to enter, and at the lower end (about 9 ins. from ground) the sides are indicated as dovetail-grooved for the bottom (C) to enter. Below this the sides are cut out to a height of 5 ins. to 6 ins. to the shape shown as a relief from plainness. The spring of the arch should be kept somewhat flat, and the leg supports thus formed would be 4 ins. wide. The back edges of sides should also be rebated for the carcass back to enter. If the doors are to be hinged on the ends (*i.e.*, on to the face edge of sides, so that they pivot on the outer edge and open clear of the carcass interior) the sides may be 19 ins. wide only.

THE CARCASS TOP (B) should be of sound and well-seasoned deal or basswood, glued and cleaned up to 19 ins. wide and dovetailed each end to enter the carcass sides. The thickness should be $\frac{7}{8}$ in. net, and the front edge will set back from the edge of carcass sides to the thickness of the doors, so that these, when hung, will bring all flush in line.

THE BOTTOM (C) should also be $\frac{7}{8}$ in. thick, not less, and the front edge should be faced with a strip of $\frac{1}{4}$ in. thick oak, so that it matches the rest. If carefully dovetail-grooved into sides the carcass should be as firm as a rock. The bottom, however, may be tenoned to enter corresponding

NURSERY WARDROBE (Contd.).

mortises in sides, or may be housed in and glue blocked and screwed through to sides, from under. The front edge, it will be noted, has the dovetail notched back $\frac{1}{4}$ in. from carcass edge, the stop serving to mask the joint.

DOORS.—Proceeding with the doors four stiles (D) can be got out from lengths of 5 ft. 3 ins. to finish $2\frac{3}{4}$ ins. wide by $\frac{7}{8}$ in. thick. They will require mortising for three rails (preferably right through), the position of the second rail allowing for a leaded light panel of about 15 ins. in height. The meeting stiles of the doors may be eased slightly from this width, the right hand one having a length of $\frac{1}{2}$ in. fillet or astragal mould glued along the edges to overlap the left hand stile

basswood. They may be grooved into position in the carcass sides to push home from the back, or may rest upon $1\frac{1}{2}$ in. by $\frac{3}{4}$ in. fillets, screwed to the sides.

TRAYS.—Should these be preferred, the fronts should be $\frac{7}{8}$ in. thick, sides and backs $\frac{3}{4}$ in., and bottoms $\frac{1}{2}$ in. net. They had best be put together in the same manner as a drawer, as there will be a considerable amount of pull upon them in course of wear. The bottoms may be screwed up to the dovetailed framing, and the fronts, about 4 ins. wide, can be cut away to a width of $2\frac{1}{2}$ ins. or so in the centre, leaving the full width of the front for about 6 ins. each end. The upper edge should also be rounded for comfort in holding

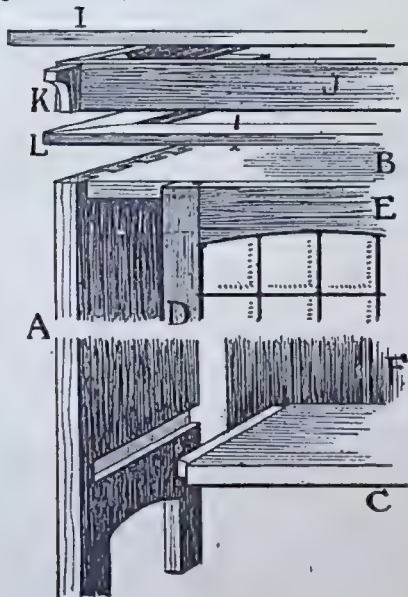


FIG. 2.—METHOD OF PUTTING TOGETHER.

when the door is closed. The top and bottom rails (E) are allowed $4\frac{1}{2}$ ins. wide with the curve to spring 2 ins., the second rail between being 3 ins. wide. Tenons should be cut each end to enter right through stiles and be wedged, or the stiles and rails may be simply doweled together. No mould is indicated, but the inner edges of rails may be rounded off towards the panels. The latter can be of $\frac{1}{4}$ in. stuff, or 3-ply screwed on from the inner side with the edges rounded off for finish, but are best of $\frac{3}{8}$ in. stuff rebated and beaded in from the back.

THE CARCASE BACK may be of $\frac{1}{2}$ in. matching, screwed on, or may be panelled up with 3 in. by $\frac{1}{2}$ in. stiles and rails, and $\frac{1}{2}$ in. panels grooved in, the back being rebated into position and screwed.

Interior Arrangements.

THE SHELVES (G, Fig. 3) if fitted, can finish $\frac{3}{4}$ in. thick by 18 ins. wide, and may be of deal or

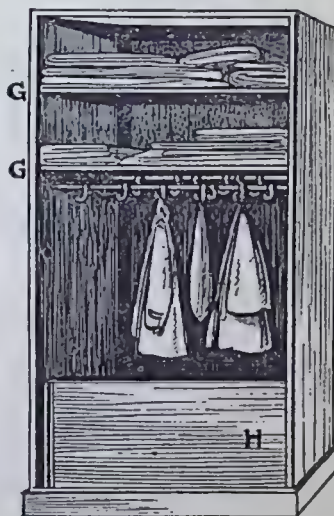


FIG. 3.—SUGGESTIONS FOR SIMPLE ARRANGEMENT OF INTERIOR FITTINGS.



FIG. 4.—ALTERNATIVE DESIGN

For purposes of sliding the tray sides should be grooved $\frac{3}{4}$ in. by $\frac{3}{8}$ in. in centre, and a corresponding fillet eased to pass freely through the grooving can then be screwed to the carcass sides at equal heights, so that the whole thing pushes backwards and forwards without hitch. Should this occur a good rubbing with old soap over the binding edges will put matters right.

THE WELL, OR BOX, indicated at H, Fig. 3, is simply formed by slipping the front, 3 ft. by 1 ft. 3 ins. by $\frac{7}{8}$ in., between a couple of fillets $\frac{3}{4}$ in. by $\frac{7}{8}$ in. by 15 ins. screwed to each carcass side to form a groove—the outer edges in all cases being smoothly rounded off. This board will then be easily removable when required.

HANGING ARRANGEMENTS.—With regard to the hanging accommodation, an improvement upon the ordinary spaced wardrobe hook is to fit two lengths of $\frac{1}{4}$ in. brass tubing to the carcass sides in the manner roughly indicated in Fig. 3. Ringed

NURSERY WARDROBE (Contd.).

brass hooks to slide upon these tubes and also clips for the ends of the tubes are obtainable from the local brassfounder or furnisher, and twelve or fifteen hooks on each length of tubing will be found very useful. A lower length of tubing can also be fitted midway, over which small clothes can be doubled to hang. Triple hooks are also very serviceable and are obtainable either to screw to carcass back or sides or swivelled to screw to the under side of shelf.

CUPBOARD TOP (I., Fig. 2) can be got out to finish 3 ft. 2 ins. by 1 ft. 11 ins. by $\frac{3}{4}$ in., this allowing for a projection of 3 ins. in front beyond the face of carcass and 1 in. over each side. The edge is shown square, but may have the under edge bevelled away, in which case the brackets can be eased in size to fit close up to the bevel.

THE FRIEZE BOARDS (J) are 3 ins. wide by $\frac{3}{4}$ in. or $\frac{7}{8}$ in. thick, to be mitred at the angles and blocked behind. The back edges of sides can be connected by a spare slip, 1 $\frac{1}{2}$ in. wide, screwed on to keep all square.

THREE BRACKETS (K) are indicated as screwed to the front of frieze, but five would look well if desired. They can be shaped from pieces 3 ins. long to finish 2 $\frac{1}{2}$ ins. wide by $\frac{7}{8}$ in. thick.

THE MITRED PIECES (L) serving as a mould under the frieze, are allowed a length of 3 ft. 2 ins. by 3 ins. by $\frac{3}{4}$ or $\frac{1}{2}$ in. thick for front and 1 ft. 6 ins. for sides. They should be screwed up to the under edge of frieze boards J.

Alternative Design—Fig. 4.

The alternative sketch at Fig. 4 will prove more serviceable to those who have need of additional accommodation in narrow space. Two useful drawers are fitted to the lower part, which can finish about 18 ins. high. The doors are indicated as hinged on ends, and can have the panels moulded with a neat ovolo section, the interior being fitted with trays and for hanging.

Inlaid Cabinet. (Continued from Page 339).

THE CABINET BOTTOM (G, Fig. 5) may be made in the same way as the carcass top—that is, a plain bottom with a planted-on mould; but it is better to have a solid bottom with moulded edge as indicated. It may be grooved to take the ends (in which case the ends will be cut a trifle longer, or these ends may be screwed from below. The plinth (H) is not a solid board, but is framed and mitred up of lengths 2 ins. wide by $\frac{5}{8}$ in. thick. Size over the plinth will be 15 ins. by 7 ins.—the same as the top. The under edge of plinth may be lined with dark green felt to prevent the cabinet from scratching a polished surface on which it stands.

THE TOP RAILS may finish 5-16 in. thick, the two side rails (Fig. 6) having inlaid lines on both faces. The side and back rails are rebated as Fig. 7.

Height for the cupboard from ground may be about 6 ft., and above this is shown an extra cupboard 15 ins. to 18 ins. high for the placing of things that it may be preferable to keep out of immediate reach of the youngsters. Such a carcass would be made up of three parts, sides, tops, and bottoms being dovetailed together and dowelled or blocked to fit in position. A couple of doors could be fitted in place of the lower drawers for the reception of toys, where they could easily be got at, should drawer accommodation be provided elsewhere in the room.

			Long.		Wide.		Thick.	
			ft.	in.	ft.	in.	in.	
A	Two sides ..	6	0	x	1	8	x	$\frac{7}{8}$
B	One carcass top ..	3	0	x	1	7	x	$\frac{7}{8}$
C	One carcass bottom ..	3	0	x	1	8	x	$\frac{7}{8}$
D	Four door stiles ..	5	3	x	2	$\frac{1}{2}$	x	$\frac{7}{8}$
E	Two top door stiles ..	1	6	x	4	$\frac{1}{2}$	x	$\frac{7}{8}$
	Two centre door rails ..	1	6	x	3	x	x	$\frac{7}{8}$
	Two bottom door rails ..	1	6	x	4	$\frac{1}{2}$	x	$\frac{7}{8}$
	Two panels ..	3	6	x	1	3	x	$\frac{1}{2}$ or $\frac{3}{4}$
	Leaded lights ..	15 ins. high to fit.						
F	Matched back ..	6	0	x	3	0	x	$\frac{1}{2}$
G	Two shelves ..	3	0	x	1	6	x	$\frac{1}{2}$
H	Toy board ..	3	0	x	1	3	x	$\frac{1}{2}$
I	One top board ..	3	3	x	1	11	x	$\frac{1}{2}$
J	One frieze front ..	3	0	x	3	x	x	or $\frac{1}{2}$
	Two frieze sides ..	1	8	x	3	x	x	or $\frac{1}{2}$
K	Three brackets ..	3	x	x	2	$\frac{1}{2}$	x	or $\frac{1}{2}$
L	One mould front ..	3	2	x	3	x	x	or $\frac{1}{2}$
	Two mould sides ..	1	9	x	3	x	x	or $\frac{1}{2}$
Two trays (if required) :—								
	Two fronts ..	3	0	x	4	x	$\frac{7}{8}$	
	Two backs ..	3	0	x	3	x	$\frac{7}{8}$	
	Four sides ..	1	6	x	4	x	$\frac{7}{8}$	
	Two bottoms ..	3	0	x	1	6	x	$\frac{1}{2}$

Lengths allow for joints, but widths and thicknesses are net. 67

NOTE.—The other six articles in this series are:—Toy Cupboard (May issue), Canopy Cradle (June), Combined Chair and Table (July), Table (August), Cot and Bedstead (September), and Two Chairs (October). These numbers may be obtained through any Newsagent, price 3d. each, or direct from the Publishers (EVANS BROS., LTD., Sardinia House, Kingsway, London, W.C.), price 4d. each, post free.

The total length over back rails is 14 ins., and over the side rails 6 ins., allowance being made for the rebate.

With the full-sized details given on the Design Supplement these notes should make the general construction of the cabinet clear. The interior arrangement may be left to the worker himself, shelves, racks, etc., being put in as required. A small lock may be added, or a neat drop catch will serve the purpose. The left hand door should have a flush cabinet bolt, and a door stop will be added unless an interior shelf already provides this. 144

THE WOODWORKER designs are not given away with back numbers. Additional copies may be had, price sixpence each, from the Publishers, EVANS BROTHERS, LTD., Sardinia House, Kingsway, London, W.C.

For useful designs in Kitchen Furniture see next Number.

FRETCUTTING AS AN ART CRAFT.

INTER-OVERLAYING.

WE have dealt in previous chapters with the combination of overlays and underlays. In the case of the illustrations given it was assumed that the overlay would be of the same kind and colour throughout; but, with or without underlaying, many beautiful effects may be had by using different colours—even different materials—for the overlay.

To explain this we may take as an example the comparatively simple design shown here. This represents a calendar panel with overlay decoration. The panel will be of wood, 3-16 in. or $\frac{1}{4}$ in., whilst the overlay may be of either 1-16 in. wood or 1-25 in. xylonite. As the ornament shown is rather delicate for wood, it may be assumed that xylonite will be preferred.

COLOUR COMBINATIONS.—Of course the whole ornament could be cut in white xylonite and would look well thus. On account of the floral features, however, an added effect is procurable by the judicious introduction of colour. The oval flower forms, for instance, could be of coloured xylonite, and this variety alone would give a sense of balance to the design. A third colour might be taken for the leaf forms which divide the stems from the flowers, although in the present case two colours are adequate.

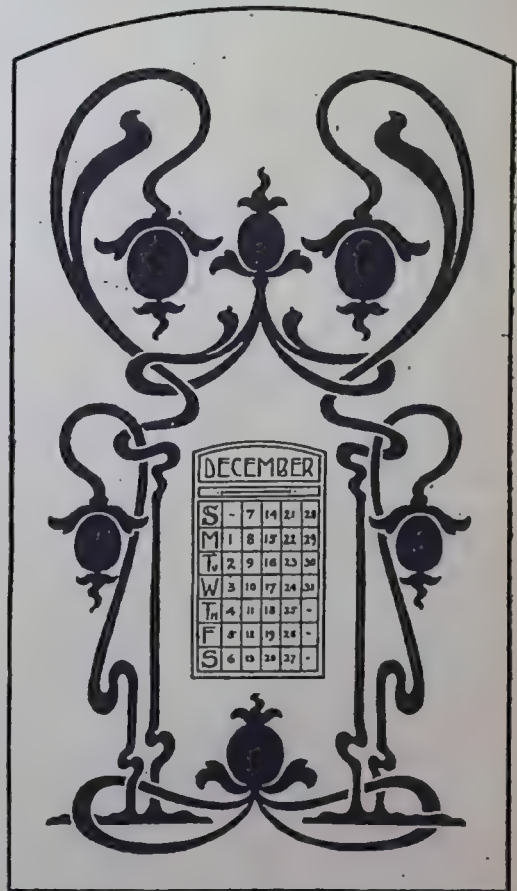
If a dark wood, such as ebony, American walnut, or rosewood, is taken for the background, the general overlay (stems, etc.) will look best in ivory-white xylonite. The ball flowers may be in what is known as golden marble—a rich yellow xylonite; and if a third colour is wanted for the small leafy features a medium deep green will be suitable. On no account should fancy "art shades" of xylonite be chosen, as these do not blend well with woods in their natural state.

CUTTING.—There is no difficulty in regard to the cutting of inter-overlays. If the main part of the ornament is to be in one colour as suggested, the intersection lines shown are not cut through. The white xylonite will be in one piece, and in this way it is more easily glued down. The coloured parts will be cut separately, and it is well to mark each so that there is no doubt afterwards as to its position. In the case of the yellow and green portions, however, it will be found less trouble to fix the two colours of xylonite together and cut both at once.

FIXING.—It is in glueing down that the inter-overlay method is apt to give trouble. In the present case there is no real trouble as the main overlay, being in one piece, serves as a guide. If, however, the stems were in two colours, intersecting as shown in the sketch, great care would have to be taken to lay every part exactly in its place. As it is, when the white xylonite has been glued down, the other parts fit in almost as a matter of course, and if a light pencil mark is

made on the wood beforehand there should be no risk of any misplacement.

Many inter-overlay designs are much more elaborate than the one indicated here, and some are further enriched with underlays. A mistake that the worker has always to guard against is in introducing too much colour. While a touch of variety enhances the design, injudicious colouring is apt to vulgarise it. It is of great importance



AN OVERLAY IN TWO OR MORE COLOURS.

to have the general contour of the design brought out in one colour, and when subsidiary features are picked out for separate colour treatment it must be seen that these are not made glaring. The present design serves as a good guide, the ball flowers giving all the variety in colour that is really required.

If wood is preferred to xylonite for the overlay, suitable kinds to use are white holly, satinwood, and silverwood.

WOODWORK PUZZLES (Contd.).

and $\frac{1}{8}$ in. wood have been used as suggested, the drawer will measure (outside) $6\frac{1}{2}$ ins. wide, $4\frac{1}{2}$ ins. long, and $3\frac{1}{2}$ ins. deep. The bar at the back should be $\frac{1}{4}$ in. by $\frac{1}{8}$ in. in width and thickness, and the opening at the side $\frac{1}{4}$ in. by $1\frac{1}{2}$ in. The slot in the bottom piece should be left until later on.

THE INNER COMPARTMENT should measure $6\frac{1}{2}$ in. long, $4\frac{1}{2}$ ins. wide, and $2\frac{1}{2}$ ins. deep, all the wood being $\frac{1}{8}$ in. thick, providing the middle partition is fitted. It is necessary that all the parts should fit to a nicety, for any looseness or tightness would prevent the easy working of the whole thing.

The size of the D piece is not of vital importance so long as it is not more than $\frac{1}{4}$ in. thick and allows

for the spring in the middle of the back piece. The groove should be a trifle larger than the piece of brass, which should be about 3-16 in. by 1-16 in., and just long enough to fit in one slot and clear the other. These slots should be carefully cut to allow a little play at the back, but none in front; the exact position may be obtained when the D piece has been fixed in position.

Any short length of steel spiral spring may be used so long as it will push the drawer out about 1 in., and close to within $\frac{1}{4}$ in. When the parts fit and work satisfactorily the back of the box may be fastened in, and the pegs driven in the top to hold the drawer in position.

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2.—COTTON REEL AND STRING PUZZLE.

THIS puzzle is made with a couple of cotton reels, a round piece of fretwood and a length of string. When set the combination should appear as shown in the front and side views A and B. It is now required to place both reels together on one loop without removing the reels off the string, or undoing or removing the knots at the ends. The round piece of wood may be any convenient size, or, for the matter of that, it need not be a round piece at all. Three holes are necessary for the correct threading of the string, but to add to the apparent difficulty of the puzzle it is better to make the four holes as shown.

through and pass over the knot. When the loop is withdrawn repeat on the other side and the puzzle is again ready.

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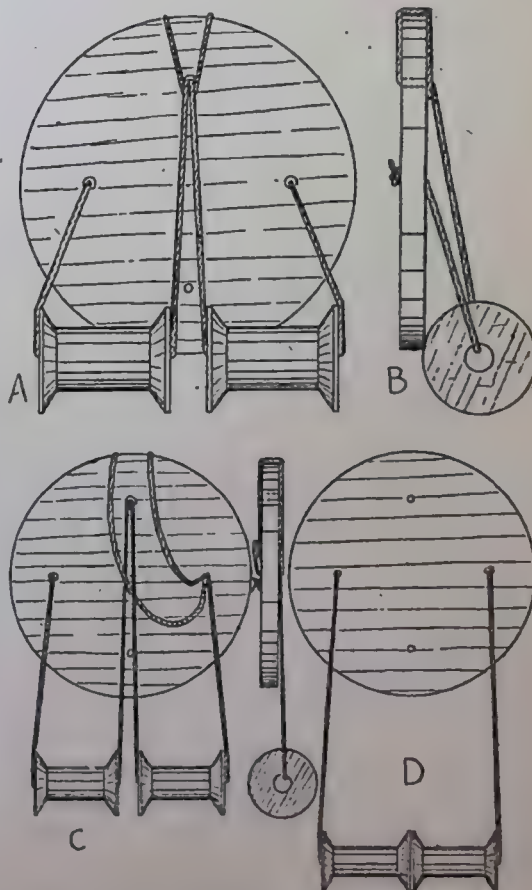
Making the Puzzle.

To make up the puzzle in the first place, take a fairly long length of smooth string (whipcord is really the most suitable), thread an end through one of the holes, and tie a large knot at the back. This knot must be drawn quite tight, and must be too large for pulling through the hole.

Next thread a cotton reel on to the string and pass the other end of the string through the top hole, allowing the reel to hang about the distance below the round piece as shown at C. Bring the end over the top of the wood, loop it under the string below the top hole, carry it back, and thread it through the hole again to bring it to the front. Thread the other reel on, and pass the end of the string through the hole on the opposite side to the first one threaded; make the loop the same as the other and tie the end behind as before.

Solution of Puzzle.

To solve the puzzle it will be necessary to draw down the top loop as shown at C, pass it over the reel on the right hand side, pinch the middle of the loop, and push it through the hole on the right. The loop should now be opened, passed over the knot and drawn back, when it will be seen that the loop is quite free on one side. Repeat this on the left hand side and the reels will be on one loop as shown at D. To set the puzzle again, first pinch the string in the middle with the reels on either side, pass through the middle hole, bring the end over, pass a reel through the loop, push



Read the important Announcement on page 337.

ELEMENTARY WOODWORK.

A STRONG OCTAGONAL TABLE.

THE table shown in elevation and plan at Fig. 1 is a very suitable piece of furniture for a comparative beginner to tackle. It is built of 1 in. wood, preferably American whitewood.

It will be as well to commence with the legs, cutting them out of a wide board in pairs, as indicated at Fig. 2. Each leg should be 30 ins. long, 7 ins. wide at

centre, and then set out a length of 11 ins. from each mark.

These marks should be exactly alike in each piece. On each edge draw a line, with the bevel, as indicated at Fig. 4, and another parallel to it 1 in. away, as shown at Fig. 5. The shaded portion in the middle of each piece should be cut out and the ends rounded, the two

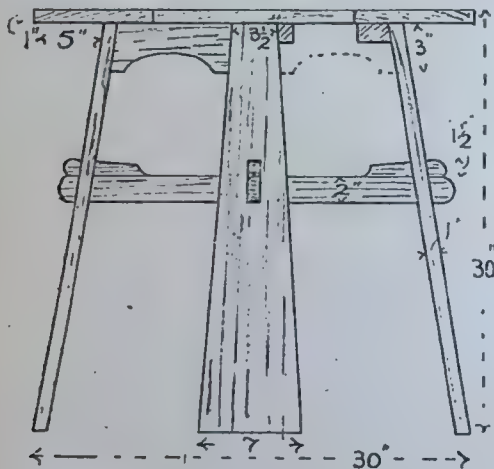


FIG. 1A.—ELEVATION OF OCTAGONAL TABLE.

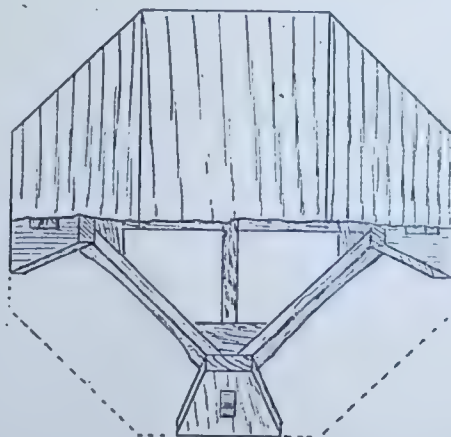


FIG. 1B.—HALF PLAN AND HALF SECTIONAL PLAN.

the bottom and $3\frac{1}{2}$ ins. at the top. When planed up to shape set out a 3 in. long slot, 10 ins. from the top, to a width of 1 in.; then cut it out, using a centre-bit to remove most of the waste before truing the sides with a chisel. As the ends of the slots, as well as the top

pieces being placed together and fitted in the slots in the legs. The small wedges should be cut out and lightly placed in position on the top edges of the rails.

We are now in a position to fit in the 3 in. by 1 in.

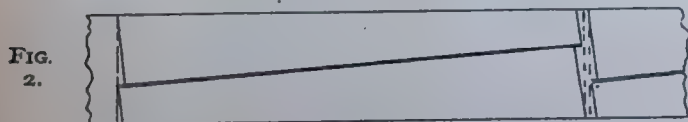


FIG. 2.

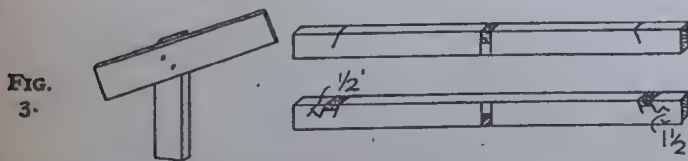


FIG. 3.

and bottom of the legs, have to be cut to an angle, it will be as well to draw out the side view of one of the legs full size, as shown in the elevation, and set a bevel to it. (Failing a bevel a substitute made by nailing two strips of wood together, as indicated at Fig. 3, will fulfil every need.) With the use of the bevel it will be possible to get the angle alike in each case.

The cross rails should be prepared next, first cutting them to a length of 2 ft. 4 ins. by 2 ins. by 1 in. Placing them both together, mark a 1 in. space exactly in the

top rails, which are first of all cut to a length of 13 ins., shaped on the underside with a spokeshave and then cut on the ends to fit. This is probably the most difficult part of the whole construction and should be carefully done. The simplest way for the beginner to go about it is to fit one piece in and mark off the angle of the ends and the edges with a pencil, and carefully cut away the wood with a sharp chisel until it fits both legs. The remaining pieces may be marked off quite easily from the first piece. The triangular blocks, of

FIG. 4.

FIG. 5.

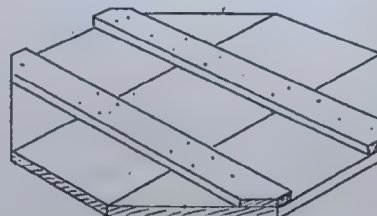


FIG. 6.—UNDERSIDE OF TOP, SHOWING BATTENS.

ELEMENTARY WOODWORK.

OCTAGONAL TABLE (Contd.).

2 ins. or 1 in. wood, shown at A, are fitted in to strengthen the top, but should not be fitted until the top rails have been nailed to the legs.

The top should be made of two or three widths nailed to two cross pieces of 1 inch wood; these pieces are not shown in the elevation, but are indicated at Fig. 6. To allow for them it will be necessary to cut recesses

in the rails. It is quite possible to get a piece of white-wood 30 ins. wide, and more than probable a suitable chest end may be obtained at the timber yard. In this case there will be no need for the cross battens underneath, and screws driven in from the rails will be quite sufficient to hold the top. The finished table is a most useful article.

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AN IRONING BOARD.

THE ironing board shown at Fig. 1 is designed for use with a kitchen table of the usual height, 29 ins., and will be found quite satisfactory in use. It is far more convenient than the ordinary ironing board, which is placed between the table and a chair, and it will fold up quite flat when not in use.

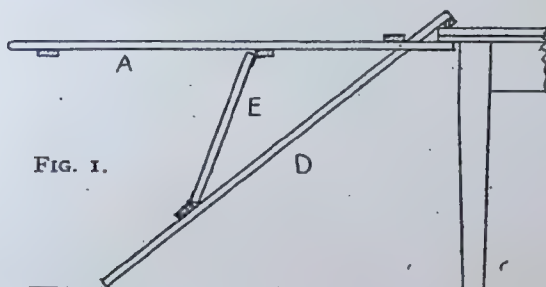


FIG. 1.

It will be advisable to use 1 in. American whitewood, one 4 ft. length 14 ins. wide, and another 6 ft. 3 ins. by 9 ins. wide. These are the finished widths, and the wood should be machine-planed about $\frac{1}{4}$ in. thick.

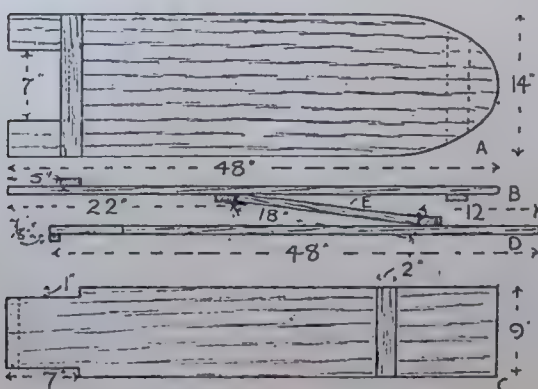


FIG. 2.—DETAILS OF IRONING BOARD.

The top piece shown at A, Fig. 2, is rounded at one end as shown, and is slotted at the other; the opening is 7 in. wide and 5 ins. deep, the back edge being bevelled to the slope shown at Fig. 1. A batten of the same wood, 2 ins. wide, should be screwed on top, and another underneath 3 ins. from the end. Next

screw on a third batten 20 ins. from the slotted end, as shown in the side view, and indicated by the dotted lines at A. The sloping support is cut from the 9 in. board to a length of 4 ft., and shaped as shown at C; one end is notched each side, 7 ins. long and 1 in. deep, and a batten 2 ins. wide is screwed on the other end, 10 ins. away. A strip of wood, 1 in. wide, is screwed to the narrow end as indicated in the lower part of the side view at D.

The support E is 18 ins. long and 9 ins. wide, and is hinged to both pieces with back-flap hinges. The board will clip the edge of the table quite firmly and will not work loose.

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How to Use the Chisel.

THE most useful kind of chisel for the amateur is that known as the firmer, for it may be used for cutting grooves, paring and simple mortising. A set ranging from 1 in. to $\frac{1}{4}$ in. width will do most of the work required. It will be seen in the illustration below that there are two bevels to the cutting edge. The first, about 35 degrees, is the angle obtained by rubbing it on the oilstone, and the thinner one, 25 degrees from the grindstone. In all cases these angles should be obtained when first grinding and sharpening, and the sharpening angle retained all through.



If good work is to be done it is essential that the chisel should be quite sharp. This is especially important when cutting across the grain.

When using the chisel for paring, it is necessary to use a slicing cut and not a direct one, and in many cases it will be found quite impossible to get a clean cut unless a slicing movement is given.

Another important point to remember in using the chisel for either of the above operations, is to have both hands on it, one holding the handle firmly and the other guiding the blade. Many serious cuts are caused by the neglect of this rule.

In using a firmer chisel for mortising, it will be advisable to have one not recently ground, for there would be some risk of breaking the thin edge.

For vertical cutting a board should always be used to place the work on, and the surface should be frequently planed smooth. To allow the chisel to dig into the bench after every cut will very quickly ruin the cutting edge.

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Next Month we begin a serial of Cabinet-Work Joints.

WHY SOME WOODS ARE BEAUTIFUL.

THE SECRET OF BURLS AND BIRD'S-EYE.

THE most beautiful of all figured woods are burls and bird's-eye. Burls are abnormal growths common to almost every species of tree, although in only comparatively few cases are they of a marketable character. They may arise anywhere on a tree, but those of greatest value are at the root, just below the surface of the ground.

How Burls are Formed.

Burls are produced as a result of some injury, such as forest fires, insect attacks, gnawing of animals, excessive pruning, &c. The effect of the injury is to stimulate the growth of dormant buds, or to give rise to a great many new ones which cannot develop into branches but form a woody tissue of intricate design. The wood is dense and hard.

A dormant bud is one which never developed into a shoot or branch. In order that such buds might remain alive and not be covered up by the woody layers, it is necessary that they grow in length each year just enough to keep the surface. In the centre of each bud is a little cylinder of pits, and around it is a small mound of wood, the fibres of which run in different directions from the rest of the wood. When cut across, the pith of the bud appears as a dark speck surrounded by a small mass of fibres on end, producing a figure known as "bird's-eye."

In addition to these dormant buds new ones may arise. If there is sufficient nourishment they will grow into shoots, but in the case of burl formation they make a short growth, die at the tip, and their places are taken by others which repeat the performance year after year. The consequence is a complex nest of buds, all capable of growing in thickness to some extent but not growing out in length. In course of time this burl may attain dimensions measurable by feet and weighing hundreds or even thousands of pounds.

Burls growing on the upper portion of a tree are usually without value for cabinet work, on account of defects due to insects. It requires long experience to be able to judge, from external appearances, how a burl is going to open up, and in cutting veneers careful manipulation is necessary to obtain the largest pieces with the finest figure.

Trees producing merchantable burls are black walnut, black cherry, ash, birch, alder, oak and redwood. Burls are common on the walnut trees of Austria, Turkey and Italy, and owing to their finely mottled and beautiful figure are much sought after for cabinet purposes.

The Causes of Bird's-Eye.

Almost everyone is familiar with the figure known as bird's-eye, which is particularly common in hard maple. Almost every tree of this species contains at least a few bird's-eyes, though in only a comparatively few cases are they abundant enough to give value to the wood for cabinet and furniture work. Bird's-eye is also found in birch, ash and yellow poplar, and is characteristic of some pines.

The cause of bird's-eye is usually ascribed to dormant buds, and in some instances this is correct. There are, however, as mentioned recently in *Woodcraft*, other causes of this peculiar formation. Sapsuckers are

frequently the cause. These birds sometimes puncture only to the sapwood, but more commonly pierce one or more growth rings to procure the sugary sap which is produced at certain seasons. The cambium layer which separates wood and bark attempts to heal the wound, and a cone of wood is produced, its size and form depending upon the extent of the injury and the vigour of the tree. Succeeding layers of wood are distorted by this cone.

Yellow poplar-trees are commonly worked on by the sapsucker, and frequently are covered with girdles and single punctures from top to bottom, producing bird's-eye, though accompanied by holes and stains resulting from the original wound which reduce or destroy the value of the wood for veneers.

Bird's-eye in hard maple is often accompanied by wavy grain, which when sawed produces a figure known as wavy or "landscape grain." This name is given it because its resemblance to a contour map. The contour-like lines are due to the denser and darker late wood of the growth ring cut across in sawing.

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Wood Stains.

A useful little leaflet, giving particulars of all kinds of chemicals required from time to time by the polisher, woodworker and other craftsmen, has just been issued by T. C. Lindsey and Co., of 17, Leather Lane, London, E.C. A copy of this will be forwarded to any one who sends a postcard (with name and address) to Messrs. Lindsey, mentioning that he is a reader of *THE WOODWORKER*. Messrs. Lindsey are the manufacturers of the well-known "Sixel" stains. These are made up in the form of dry powder, to which is added methylated spirits or water. The stains, which are of excellent quality, are sold at threepence a packet; and as they are ready for use in a few minutes it is a great convenience to have a few packets at hand.

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A Free Booklet.

The offer on page 349 to send the booklet of the "Cyclopædia of Mechanics" free to all our readers should be taken advantage of without delay. The booklet describes one of the most complete works of reference for the handy man that has ever been issued. Opportunities for acquiring knowledge should never be missed, and as particulars can be obtained without charge no time should be lost in turning to page 349 and acting upon the advice given there.

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Repair a Watch—to Stucco a Cottage—to Etch
a Brass Name Plate—to Dry-clean a Carpet—
to Test Drains—to Stuff and Mount Animals—
to Prepare a Hard Stopping for Wood—to Dye
Feathers, Cloth, &c.—To Patch Boots—to
Calculate Hydraulic Pressure—to Make Tar-
paulin—or Sulphuric Acid—to Heat a Baker's
Oven by Wood Fire—to Cut Circles of Plate
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THE QUESTION BOX.

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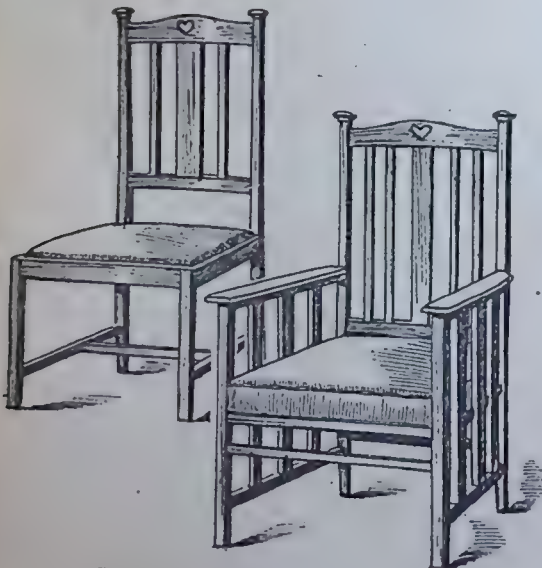
QUESTIONS of general interest will be answered here. Readers, however, will kindly note:—(1) As the Editor may desire to reply by post a stamped addressed envelope must be enclosed. (2) Questions will be answered as early as possible after receipt, but when sketches have to be prepared, or when research has to be made, a short interval must elapse.

NOTE.—With each query must be sent a "Question Box" Coupon (see page 3 of Cover). All queries to be addressed: Editor, THE WOODWORKER, Sardinia House, Kingsway, London, W.C.

SINGLE CHAIR AND ARM CHAIR.

A READER in Rangoon has made a settlee from an illustrated article appearing in our issue of July, 1912. He now wishes to make an arm-chair and single chair to match, and as the subject should be of general interest we give sketches and particulars here.

REPLY.—We offer suggestions for the arm and occasional chairs which you wish to make up *en suite* with the settlee referred to. The arm chair, as shown, could have a loose cushion with the frame cross-webbed under it if something simple is desired. Height for the



SINGLE CHAIR AND ARM CHAIR.

arm chair can be up to 3 ft. 9 ins., allowing 1 ft. 6 ins. to top of seat (finished), and 2 ft. 3 ins. for the back above this. Height of arms will be 10 ins. to 11 ins. above seat; width of back 18 ins.; width across front of chair over uprights 23 ins.; depth back to front of seat 19 ins., over framing; back legs $1\frac{1}{2}$ in. face by $1\frac{1}{2}$ in. thick at seat, tapering to $1\frac{1}{2}$ in. or so at top end; top rail $3\frac{1}{2}$ ins. wide by 1 in.; second rail $1\frac{1}{2}$ in. by $\frac{7}{8}$ in. thick; seat rails $2\frac{1}{2}$ ins. by $1\frac{1}{2}$ in. thick; front legs $1\frac{1}{2}$ in. by $1\frac{1}{2}$ in.; underframing $1\frac{1}{4}$ in. by $\frac{7}{8}$ in.; slats (arms) $2\frac{1}{2}$ ins. by $\frac{1}{2}$ in.; slats (back) $\frac{7}{8}$ in. by $\frac{1}{2}$ in., centre 3 ins. by $\frac{1}{2}$ in.; arm rests 2 ins. wide by $\frac{1}{2}$ in., with a $\frac{7}{8}$ in. by $1\frac{1}{2}$ in. rail under. If the back rails are to be carved they can be cut from 2 in. stuff. Back legs may be straight, but are best with a rake of about $1\frac{1}{2}$ in. at seat height.

For the single chair the height to top of seat can be

18 ins., and 2 ft. for the back above this. Width of back is 15 ins.; depth of seat 17 ins.; width across front of seat over legs 18 to 19 ins.; seat rails $2\frac{1}{2}$ ins. by $1\frac{1}{2}$ in.; front legs $1\frac{1}{2}$ ins. by $1\frac{1}{2}$ in.; underframing 1 in. by $\frac{7}{8}$ in.; back legs $1\frac{1}{2}$ in. face by $1\frac{1}{2}$ in. thick at seat, tapering to $1\frac{1}{2}$ in. at top; top rail $3\frac{1}{2}$ ins. wide by $\frac{7}{8}$ in. thick; second rail, $1\frac{1}{2}$ in. by $\frac{7}{8}$ in.; centre slat 3 ins. wide; others $\frac{7}{8}$ in. wide by $\frac{1}{2}$ in. The loose drop-in seat is made up in a separate frame of 1 in. stuff, webbed and stuffed, and may rest upon braces about $2\frac{1}{2}$ ins. by $2\frac{1}{2}$ ins. by $1\frac{1}{2}$ in., served into the inner angles of the seat frame, these also serving to greatly stiffen the whole thing.

It may be added that an adjustable arm chair in similar style was fully described and illustrated in THE WOODWORKER of September, 1911. See also issue for June, 1912, page 155, giving alternative details to the foregoing; also March, 1912, page 70, for single chair. Possibly you may have our handbook on "Practical Upholstery" (price 7d. post free, from the Publishing Offices, Sardinia House, Kingsway, London, W.C.). This you will find of great help. 62

Duties of Manual Training Instructors.

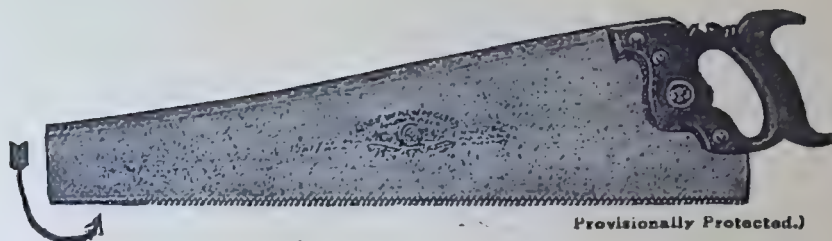
C. M. (Weymouth) asks for particulars as to the duties of Manual Training Instructors, and also as to the necessary qualifications?

REPLY.—In the main a Manual Training instructor in woodwork has to teach classes of boys how to make simple articles in wood, and to draw them in simple plan and elevation and isometric projection. He may have to take cardboard and other simple forms of handwork, and probably a little sheet metalwork. He should thoroughly understand geometry and be able to make sketches on a blackboard, and therefore should be practised in freehand and object drawing. With certificates in these subjects it is possible to obtain a position as assistant instructor, but it is of the greatest advantage to possess a certificate of Manual Training. It may be possible to attend a class in your town; if not, it would pay you to attend one of the holiday courses held in connection with the Educational Handwork Association. Full particulars may be obtained on application to the Secretary, 35, Lower Rushton Road, Bradford. 120

Chesterfield Settee.

A. M. A. (Glossop).—Illustrated instructions on the subject of adjustable ends to box ottomans which would answer your purpose were published in THE WOODWORKER issues, January 8th, 1910, and December, 1910, both of which may be had from the Publishers, Evans Bros., Ltd., Sardinia House, Kingsway, London, W.C. 122:

New Hand Saw



EASY STARTING - NAIL CUTTING

This new saw has about 4in. from the toe toothed with special small teeth so that there is no jar or tendency to jump when starting the cut. These teeth are also filed like a hacksaw, straight across, and can be used to cut through a nail or other piece of metal embedded in the wood.

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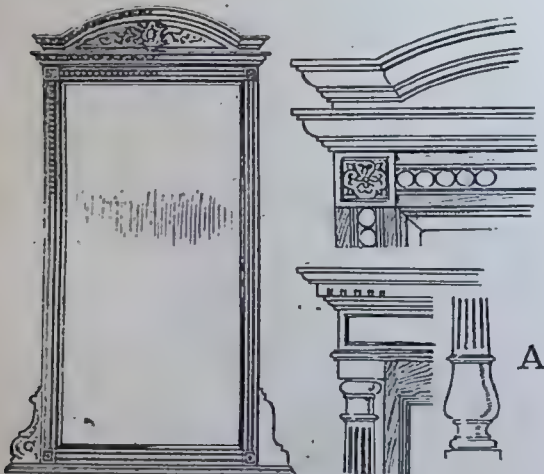
Ætna Works, SHEFFIELD.

THE QUESTION BOX (Contd.).

Pier Glass.

T. B. (Dalton) writes: "Could you supply me with a rough sketch showing a pier-glass of about 6 ft. by 3 ft., giving a few details of construction. Nothing very elaborate is required. I have a quantity of sound bay wood which I think suitable."

REPLY.—You do not state whether the frame for the pier glass is to receive any carved treatment, but we offer a few details which (with or without carved detail) should serve your purpose. For the size of glass mentioned, 6 ft. by 3 ft., the framework should be about 3 ins. wide by 2 ins. thick. In Fig. 1 the thickness is broken by a hollow, and the face stop-scratched against a square panel in the angles. Between the scratches an easily carved "pip" detail is indicated, and the panel may be treated with a carved patera or turned disc mounted in it. The inner edges of frame carry an ovolo and square. If preferred, the face of



PIER GLASS, ABOUT 6 FT. 6 INS. BY 3 FT. 6 INS.

framework may be treated with five reeds to stop against the angle panels, or may be sunk in centre about $1\frac{1}{2}$ in. wide to receive a narrow repeat fret which can be glued in. The cornice can be 2 ins., section, with a finished projection of $1\frac{1}{2}$ in. An alternative treatment is indicated at A, showing a dentilled cornice and frieze treatment with a three-quarter column mounted on pilaster. The shaft can be fluted and the swell carved acanthus. Your silvered plate, bevelled, should cost you about 35s., and can be obtained from Messrs. Spencer & Co., 28A, New Inn Yard, Shoreditch, E. The glass-plates for fixing the frame to wall can be obtained through most furnishing ironmongers for a few pence. A plain frame, without any carving, can easily be carried out on the lines indicated. 121

Cleaning Oil Painting and Restoring Frame.

J. K. (Lincoln) has to clean an oil painting and repair and re-gild the frame. He asks for particulars as to how to proceed.

REPLY.—Your picture may require careful treatment, and this will vary according to the varnish that has been used upon it. If you do not know what kind

of varnish is present try rubbing with the finger-tips or palm of the hand in a corner. If any of the varnish comes away by this treatment it will probably be mastic, and the rubbing should be continued till all the varnish is removed. Do not use water, or soap and water, on the varnish, or it will turn milky. Also take care to stop rubbing as soon as the colour is exposed. If dry rubbing does not touch the varnish try rubbing a corner with ammonia, first getting the picture in a good light so that the effect can be closely watched or the ammonia may eat into the picture. Only a small portion should be done at a time, and a little water should be handy to wipe the ammonia away should it prove too penetrating. If a mixture of varnishes has been applied try turpentine and methylated spirits in equal parts, or you may have to scratch away all with a penknife—a somewhat tedious job. Afterwards the picture—the painted surface—will require cleaning, and for this a piece of raw potato is as good as anything. Then wipe over with a damp chamois. In re-varnishing use the best copal or mastic varnish. With regard to re-gilding the frame, which you say has received a couple of coats of white paint, if the paint is quite dry give it a coat of pipe-clay and water, and wipe off after an hour or so when dry. A coat of best gold size should then be given, and this should be watched till it becomes tacky. The frame will then be ready for the gold powder, which can be dusted on and wiped in with a piece of chamois leather. If the frame is carved or has compo. mounting the gold must be dabbed into the undercutting with a sable pencil. A preliminary coating of silver is said to greatly prolong the brightness of the gold. 119

Oak Fuming.

W. I. (Durham) writes:—"Lately I have been fuming an oak mirror frame. The wood, which was obtained from two different sources, has part of it turned out a good brown, and the remainder has hardly changed colour at all, although it was left for two full days in the box with a plentiful supply of ammonia. I would like to have the lighter parts to match the darker. What would you suggest?"

REPLY.—The part of your work which has failed to take the fumed finish is probably sap-wood, and you will have to colour it to match the darker portions by other means. Get the wood ready and have at hand a small quantity of vandyke brown, brown umber, also a little red and black. To prevent the grain rising give a preliminary rub over with polish, and in course of colouring you will have to pick out and treat the lighter parts independently. Pour some methylated spirits into a saucer with about one-third the quantity of polish. Make a suitable pad of wadding, and soak it in the saucer after mixing well with a little of the colour. More brown umber or vandyke can be added as required to match up, the depth being obtained by the addition of a little black and reduced by thinning with the methylated spirits. Difficulties of this sort often occur in course of fuming oak or walnut. Full particulars in regard to fuming are given in our 1s. handbook on "Staining and Polishing," 1s. 2d. post free. 118

NOTE.—Many replies are unavoidably held over till next month.

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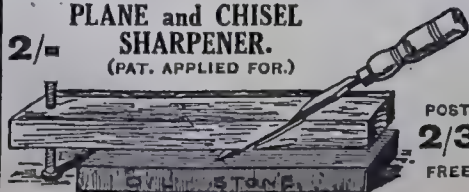
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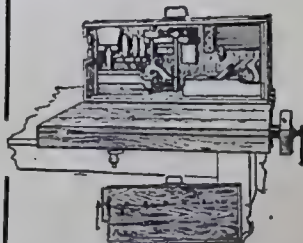
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A Mitre Problem.

The illustration at Fig. 1 was given as the subject of one of our recent competitions. The incomplete elevation shows panelled framing, round the inside of which a moulding (shown in section at Fig. 2) is to be glued and mitred. The problem set was to draw, full size, a complete elevation, showing all construction lines. The

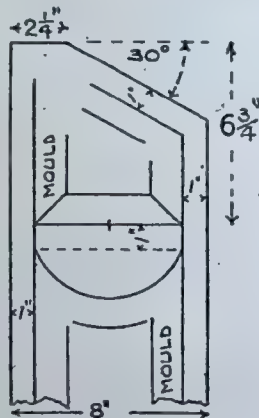


FIG. 1.

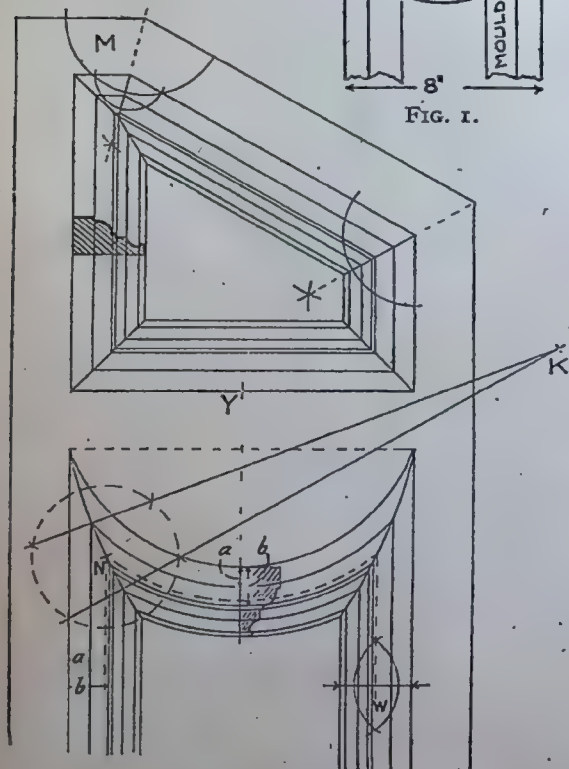


FIG. 2.—SOLUTION OF THE MITRE PROBLEM.

prize awards were announced last month, and the solution, now given at Fig. 2, will no doubt interest the competitors and many other readers.

With regard to the top panel, the margin should of course be the same width all round the panel. The correct method of mitreing the moulding necessitates three mitres being cut at M; the moulding will then intersect in every member without any alteration to the sectional shape. The mitres are found by dividing the angles. With regard to the lower panel, a curved mitre is necessary to divide the angle so that the moulding will intersect in every member without any alteration to the sectional shape. The width of the moulding is bisected as at W and a dotted line carried round. Where this intersects the plotted curved mitre at N draw a circle; with same radius strike points from each side of curved mitre; through these points draw straight lines until they meet at K. The true radius of the curved mitre will be K.N. 117

To Prevent Planes from Showing Hammer Marks.

The act of striking the fronts of the jack and trying planes, to withdraw the cutting irons, results in more or less disfigurement, according to the skill of the user or the care he takes in the use of his hammer. This disfigurement may be obviated entirely by boring a three-quarter inch hole in the front of the plane, and inserting a hard wood pin, leaving this protecting upwards slightly so that it will receive the blows of the hammer. 104

How to Re-cover a Small Billiard Table.

Small billiard tables are now considered almost necessary pieces of furniture, and as the cloth on these is far from everlasting, it may be useful to know that the fixing of a new cloth is by no means difficult. Along the sides of the table will be found certain projecting knobs, which a good many people imagine are only ornamental; they are really plugs inserted to cover the screws which hold the side pieces of the table in position. These plugs must be forced out by inserting the edge of a chisel under them; the screw heads can then be seen. The screws must be withdrawn, when the side and end pieces will come away, bringing the cushions with them and exposing the tacks which hold the cloth on.

The old cloth having been removed by drawing out the tacks, the new one can be tacked on in the same way, pulling it as tightly as possible without tearing it, fixing it at the ends of the table first. The sides will be fixed next, and then the cloth can be manipulated at the pockets, stretching it so that it sets smoothly to the openings.

The cushion coverings can be untacked, and on turning up the cloth after this is done it will be seen that the cloth at the top of the cushions is fixed in grooves with strips of wood. These must be forced out, and the new covers fixed on in the same way. Some care will be needed in fixing the cushion covers or the cloth will not fit smoothly round the pocket openings, but by going slowly and carefully all wrinkles may be avoided.

Before stripping the old cloth, the position of the baulk line and spots should be noted, also the size of the D, so that these can be marked on the new cloth. 105

MISCELLANEOUS ADVERTISEMENTS.

Oak Picture Mouldings 1 in. 8d., 1½ ins. 10½d. per 12 ft. lengths; all kinds of fancy mouldings. Speciality: mouldings milled ready for joining. Complete catalogue of mouldings, pictures, etc., 4d. stamps; booklet "How to Frame Pictures, free.—Watts, Dept. K., Eccles New Road, Salford.

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Wanted, Second-hand Copies of Furniture and Woodwork Books: Cecinskys, Macquoids, Foley's, R. Davis Benn's, Strange's, Ellis's Joinery, Barber's Woodwork.—Write offers Box W. F., "The Woodworker and Art Craftsman," Sardinia House, Kingsway, W.C.

Postal Tuition, Cabinet Making, Manual Training, etc., Working Drawings, etc.—Wm. Fairham, 48, Draper Street, Leicester (Examiner, Technology to L.C.C.)

Wanted.—"The Woodworker" and Design, for July, 1911.—Parry, Hughenden, Bembridge, I.W.

Wanted.—Vol. 8 of "Woodworker". Write, stating price.—F. W. Walker, School House, Manca, March.

"Woodworker," Vols. 1 to 6; two bound, offers.—W. 69, Richmond Avenue, Prestwich.

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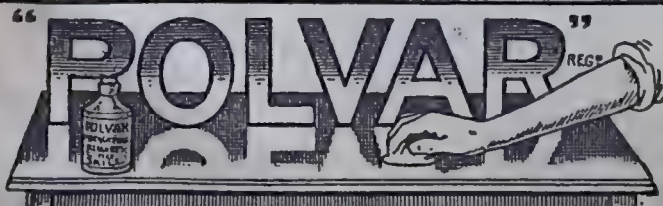
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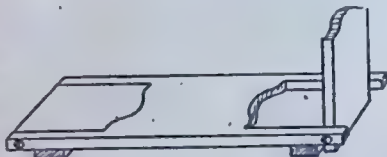
HOW TO DO IT (Contd.).

Useful Walnut Stain.

For staining small articles to imitate walnut, one of the most useful methods is to add a little Brunswick black to some turps until the desired depth of colour is reached. This stain leaves a pleasant egg-shell finish, and is quick drying and easily applied. 87

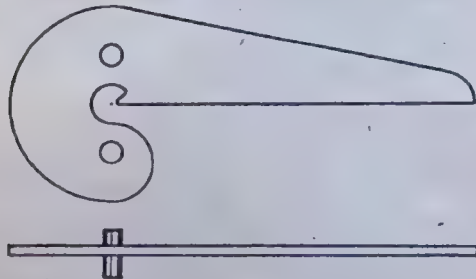
Quickly-made Folding Book Rack.

Plane up a piece of wood to 6 ins. wide and $\frac{1}{8}$ in. thick, and true up the ends to a length of 18 ins. Set out the shape below and saw out with a fret or bow saw. Bore holes 1 in. away from the ends, and drive in $1\frac{1}{2}$ in. round-headed screws. Prepare two 6 ins. by $1\frac{1}{2}$ in. by $\frac{3}{4}$ in. pieces, and screw them on as shown, so that the shelf when raised will rest against them. 88



How to Find Centre of a Round or Irregular-shaped Piece of Wood.

The best and quickest way to get the centre is to use what is known as a centre square. This is a piece of $\frac{1}{2}$ in. or 3-16 in. fretwood. In each of the holes shown a



wooden peg is fitted. If the tool is placed on the circumference in three or four places the centre may be found quite easily by the intersection of pencil lines. The shape is easily cut out with a fretsaw. 90

An Improvised Glue Pot.

Those who use glue in small quantities only will find it to their advantage to utilise the contrivance shown in the drawings, rather than one of the very small

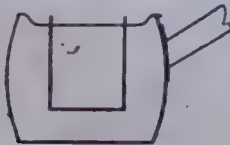


FIG. 1.



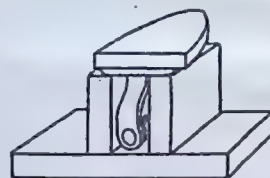
FIG. 2.

glue pots which usually do duty for the amateur. The principal part of this home-made glue pot consists of an ordinary kitchen saucepan. This should be of fairly large size, say to hold three or four pints. It

forms the outer or water vessel. The inner vessel is formed out of a tin cannister, or one of the tins in which golden syrup and similar delicacies are sold, the only necessary condition being that it must be water-tight. A stiff wire is passed through this tin, near the top, and the ends are bent so that they will rest on the rim of the saucepan, and allow the top of the inner tin to be on the same level, as shown in the section Fig. 1. Another wire passes through at right angles to the above, but this must be bent so that it runs round the side of the tin, otherwise there would not be room to use the glue brush. The one cross wire answers a useful purpose; the surplus glue can be squeezed out of the brush on it, instead of against the side of the pot, as is usually done. Fig. 2 shows the arrangement as seen from above. 106

A Useful Anvil.

The amateur metal worker need not despair if he has not an anvil, for the ordinary kitchen flat iron forms an excellent substitute if mounted in a simple wooden frame as shown. Fairly thick wood should be used, the uprights being



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NOTICES.

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Secretary to the Committee

Shire Hall, Bury St. Edmunds.

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